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SUBJECT INDEX TO THIS ISSUE

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DIURETIC ACTION OF PARATHYROID EXTRACT-COLLIP IN CERTAIN EDEMATOUS PATIENTS*

WILLIAM S. McCANN, M.D.

ROCHESTER, N. Y.

In 1925, Davidson[1] recorded a case of hypothyroidism with nephrosis and tetany. Preliminary treatment with thyroid gland produced some loss of weight and an increase in the volume of urine. Subsequent treatment with parathyroid extract-Collip not only relieved the tetany but caused a rapid subsidence of the edema.

Mason[2] observed a patient with chronic nephritis, slight edema and hypocalcemia. Tetany was not observed. Parathyroid extract-Collip was given. Within two days the urine volumes increased and a remarkable readjustment of the altered chemical constituents of the blood occurred, with relief of the symptoms of acute depression in renal function.

Since the report of these cases, it has been possible for me to observe similar results in three edematous patients with nephritis. While these observations were in progress, Meakins[3] read a paper before the Association of American Physicians concerning the effects of administration of thyroid and parathyroid preparations to patients with nephritis.

The three cases are here reported. The determinations of the calcium concentration were made by the method of Clark and Collip.[4] The serum proteins were determined refractometrically, correction being made for the increment due to nonprotein nitrogen, and the factor 0.00194 being used, instead of Reiss' factor of 0.00183.[5] In case 3, the albumin and globulin fractions were determined by Howe's method.[6] The unit dose of parathyroid extract as defined by Collip[7] is "one hundredth of the amount of extract which will produce an average increase of 5 mg. in the blood serum calcium of normal dogs of approximately 20 Kg. weight, over a period of fifteen hours."

* From the Department of Medicine, University of Rochester School of Medicine and Dentistry.

1. Davidson, J. R.: A Case of Adolescent Myxedema, Accompanied by Tetany of Parathyroid Origin, Treated with Collip's Parathyroid Extract, Canad. M. A. J. **15**: 803 (Aug.) 1925.
2. Mason, E. H.: A Case of Chronic Nephritis Treated with Collip's Parathyroid Extract, Canad. M. A. J. **16**: 538 (May) 1926.
3. Meakins, J. C.: Reaction of Chronic Nephrosis to Thyroid and Parathyroid Medication, J. A. M. A. **89**: 149 (July 9) 1927.
4. Clark, E. P., and Collip, J. B.: A Study of the Tisdall Method for the Determination of Blood Serum Calcium with a Suggested Modification, J. Biol. Chem. **63**: 461 (March) 1925.
5. Neuhausen, B. S., and Rioch, D. M.: Refractometric Determinations of Serum Proteins, J. Biol. Chem. **55**: 353 (March) 1923.
6. Howe, P. E.: Determination of the Proteins of the Blood: A Micromethod, J. Biol. Chem. **49**: 109 (Nov.) 1921.
7. Collip, J. B.: The Parathyroid Glands, Medicine **5**: 1-58 (Feb.) 1926.

REPORT OF CASES

CASE 1.—*History.*—P. G., an Italian tailor, aged 32, came to the medical service complaining of having had "kidney trouble" for five weeks. A sore throat was noted, Jan. 18, 1927, followed by puffiness of the eyelids and face, January 20. He had had nocturia from one to two times a night for fifteen years, and with the present illness he urinated every thirty minutes during the day. After two or three days, the hands, feet, abdomen and genitalia became diffusely swollen. The patient had been put on a milk diet by his physician. Dizziness, eye symptoms, headaches, or back pain were not noted. A four weeks' rest in bed had not resulted in any marked improvement. For two weeks he had been moderately dyspneic and orthopneic. He had vomited the milk for the last three days before admission. The urinary volume had been small and decreasing.

The patient had always been in good general health. He had had bronchitis in 1917 and influenza in 1919. Occasional earaches had been followed by discharging ears, more marked on the right. There was no other history of cardiorespiratory or gastro-intestinal symptoms. He had been married ten years and his wife had never been pregnant. There was no history of venereal infection. The family history was irrelevant.

Physical Examination.—The patient was well developed and nourished, and slightly dyspneic. There was puffiness about the face; he was pale, but the lips were cyanosed. The eyeballs were somewhat prominent. There was diffuse swelling of the hands, and extensive pitting edema over the sacrum, thighs, ankles and feet. The right ear drum was perforated and reddened. The pupils reacted to light and in accommodation, and the retinas were normal. The teeth were in good condition. There was dulness at both lung bases with diminished breath sounds. The heart was enlarged on percussion, the left border being 12.5 cm. from the midsternum. The sounds were of good quality, with a very short systolic murmur at the apex, and a reduplicated second pulmonic sound. The blood pressure was 150 systolic and 110 diastolic. The abdomen was rotund and distended, and there was a fluid wave. Nodular masses were felt in the prostate, centrally located; they were small and firm. The scrotum and penis were edematous. The reflexes were normal.

Laboratory Examinations.—Examinations made at the time of the patient's admission showed:

Blood: Negative Wassermann reaction; hemoglobin, 88 per cent (Sahli); red blood corpuscles, 4,190,000; white blood count, 12,400; normal differential count, and a normal blood smear. Chemical analysis of the blood showed: nonprotein nitrogen, 60 mg.; sugar, 82 mg.; creatinine, 2 mg. per hundred cubic centimeters; serum, total protein, 4.9 per cent.

Stool: This was green and loose. The guaiac test was negative, and the composition of the stool was normal, except for undigested fat.

Urine: On boiling, the urine became solid. Analysis showed no sugar; acetone, two plus; red blood cells and rarely white blood cells were present in the sediment, which contained many granular and cellular casts. The guaiac test was positive. Phenolsulphonphthalein excretion was 10 per cent the first hour, and 10 per cent the second hour—a total of 20 per cent for two hours.

The roentgenologic observations of the chest suggested that there might be a latent pulmonary tuberculosis of the apexes.

Course Under Treatment.—The course of events is shown graphically in chart 1. On admission the urine output was very small, 30 cc. in twelve hours, and there was vomiting, slight elevation of blood pressure, and moderate increase in the blood nonprotein nitrogen. A salt-free diet (1.5 Gm. of sodium chloride) was prescribed, with a fluid intake of 2,000 cc. This diet consisted of protein, 60 Gm.; fats, 250 Gm., and carbohydrates, 110 Gm. In response to this, a water diuresis occurred, during which the volume of urine increased to a maximum of 3 liters on the ninth day, greatly exceeding the intake of liquids. During this water diuresis the weight changed but little and the chloride excretion remained low, but the nonprotein nitrogen fell to 35 mg. per hundred cubic centimeters.

The excretion of phenolsulphonphthalein, February 23, was 20 per cent in two hours, and on March 5 it was still only 24 per cent in two hours.

From March 6 to March 13 the weight remained nearly constant at 80 Kg. The chloride excretion was low, about 1.5 Gm. daily. Two doses of potassium citrate were given, March 10 and 11, without evidence of diuresis.

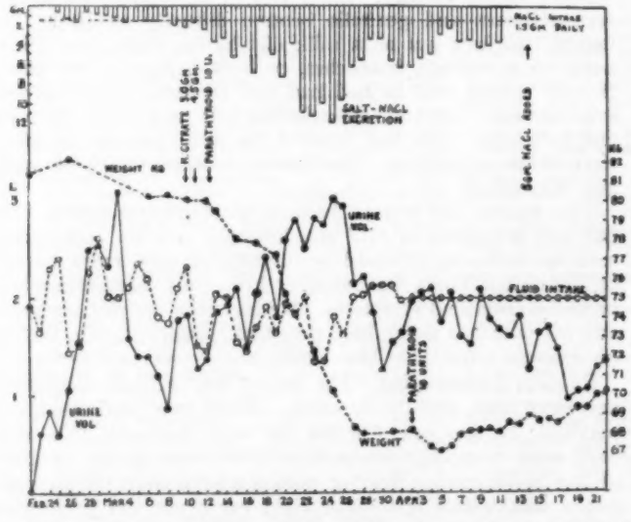

Chart 1 (case 1).—Acute nephritis: effect of parathyroid extract on weight curve, volume of urine, and salt excretion in the urine.

March 13, a small trial dose of parathyroid extract-Collip (10 units of para-thor-mone-Lilly), was given at 3 p. m. By the following morning, a decrease in weight was noted with a definite increase in chloride excretion. The serum calcium, which was found to be 8.9 mg. per hundred cubic centimeters, March 7 and 9, and 9.9 mg. per hundred cubic centimeters before injection, was raised to 12.8 mg. fifteen hours after injection. The diuresis continued until April 28, with great increase in the chloride output and subsidence of the edema as shown by a fall in body weight from 79.4 to 68 Kg. The urine volumes then decreased. A slight edema of the ankles remained.

On the day following the administration of parathyroid extract, the phenolsulphonphthalein excretion was 57 per cent in two hours.

April 2, a second injection of 10 units of parathyroid extract-Collip was given, followed again by a moderate diuresis with increase in salt excretion and a transient dip in the weight curve, and disappearance of the traces of edema. The serum calcium was found to be 10 mg. before this injection and only 9.9 mg. fifteen hours after the injection.

The weight curve slowly rose during the latter part of the patient's stay in the hospital. This may have been partly due to an increase in diet to 4,000 calories daily.

He was discharged to the outpatient department with considerable albuminuria, but no hematuria or visible edema. During the month of May his weight increased, and edema of the ankles was noted at night but was gone by morning. The blood pressure remained normal, ranging from 108 systolic and 72 diastolic to 120 systolic and 80 diastolic. No further hematuria was noted. The eyegrounds did not show any abnormalities except those of myopia.

A tonsillectomy was performed, June 4. Following operation there was still 7 Gm. of albumin per liter. The phenolsulphonphthalein excretion was 70 per cent in two hours. June 28, there was still some edema of the ankles, but the albuminuria was less marked.

CASE 2.—*History.*—Mrs. I. C., aged 21, entered the Strong Memorial Hospital, June 4, 1927, complaining of swelling of the face, legs and abdomen, which began during a pregnancy four years before admission. In the third month of the pregnancy, the legs became edematous. In the fifth month the patient had convulsions, with a blood pressure of 195 mm., which led to interruption of the pregnancy. Following this there was a transient amblyopia and generalized edema (face, legs and abdomen), which gradually subsided. Puffiness of the face and swelling of the ankles recurred whenever she had a cold. Her health was sufficiently good to permit her to work as a telephone operator until November, 1926. In July, 1926, the second pregnancy occurred. At the third month, edema was noted and nearly the whole period of the pregnancy was spent in bed. The blood pressure rose to 190 mm. systolic. In March, 1927, she was delivered of a normal child weighing 4¼ pounds (2 Kg.). After nursing the child two weeks, the patient developed a fever and the child was weaned. The breasts became caked, and pains were present in the joints, especially of the arms. In April, 1927, sore throat developed with swelling of the cervical nodes. From this time on she became quite edematous, and was confined to bed for eleven days before admission to the hospital. There had been nocturia throughout the whole period of four years, especially during the last three months. At the time of admission there was orthopnea and dyspnea even on slight exertion. No hematuria was noted. The urine volumes were about 1,500 cc. daily. Bilateral earaches had been frequent at the time of admission.

The patient's health had been excellent until the present illness, aside from severe influenza in 1918, at the age of 12, and pleurisy and pneumonia at 14 years, with yearly recurrences of pleural pain and cough each winter. There was no history of repeated sore throats until the present illness. There had been night sweats from April to June, 1927. Her best weight when free from edema had been 145 pounds (65.8 Kg.), two years before admission, whereas on entry it was only 132 pounds (60 Kg.) when she was quite edematous. There were no gastro-intestinal symptoms, except melena (?) noted twice, six weeks before entry. There had not been any urinary symptoms prior to the present illness. There was some menorrhagia, but no other abnormality of catamenia. The patient was married at 17, and was employed as telephone operator, except when pregnant, until the present illness.

The patient's father had died of cancer of the nose at the age of 46. All the grandparents had had cardiovascular renal disease, and the paternal grandfather had had obesity and diabetes as well.

Physical Examination.—The patient's height was 161 cm., and her weight, 59.6 Kg. She was well developed but pale, with marked edema of the face, arms, legs and back, and a distended abdomen. She was lying on two pillows, breathing rather rapidly (28), with frequent unproductive cough. There was no cyanosis, but the skin was of a waxy pallor. She looked chronically ill and in moderate discomfort. There was no general glandular enlargement, and only a few small shotlike nodes were found in both postcervical chains. The left elbow joint was partly stiff and could not be completely extended. Both eyes showed evidences of albuminuric retinitis. The ears showed subacute catarrhal otitis media with some reduction of hearing. The tonsils were scarred and deeply buried. There was evidence of fluid posteriorly at the bases of both pleurae, with some moist râles over both lung bases. The cardiac impulse was diffuse and heaving, with marked pulsation of the carotids and in the suprasternal notch. The area of dulness was increased to left and to right, with a loud systolic murmur transmitted into the left axilla. The

second pulmonic sound was greater than the second aortic sound. The rate was rapid (96), and the rhythm regular. The blood pressure was 180 systolic and 110 diastolic. There was no evidence of peripheral arteriosclerosis. The abdomen was protuberant with ascites, the umbilicus protruding, with a fluid wave and shifting dulness. The liver, spleen and kidneys were not felt. The pelvic, rectal and neurologic conditions were normal. There was marked edema of the legs.

TABLE 1.—*Chemical Analysis of the Blood in Case 2*

Date	Non-protein Nitrogen	Creatinine	Uric Acid	Sodium Chloride	Serum Calcium	Serum Protein, per Cent	Carbon Dioxide C. P. per Cent by Volume
6/ 7/27	46	...	4.4	498	6.8	5.47	31.5
6/14/27	43	1.5	5.4	...	8.0	....	49.8
6/16/27	..	...	...	...	6.9	....	....
6/25/27	..	...	...	...	...	6.91	....
6/27/27	38	...	3.9	...	10.3	....	40.8

Laboratory Tests.—Blood: The Wassermann reaction of the blood was negative.

June 5, 1927, the hemoglobin was 38 per cent; the red blood count, 2,050,000; the white blood count, 24,200, with a normal differential count. The red cells were normal, and platelets were abundant.

June 25, 1927, the hemoglobin was 40 per cent; the red blood count, 2,360,000, and the white blood count, 15,200. The chemical reactions of the blood are shown in table 1.

Urine: On admission, the urine was cloudy and alkaline, with a specific gravity of 1.015. Sugar was not present. There was nearly complete coagulation of albumin on boiling. There were many hyaline casts, occasional red cells, and numerous leukocytes.

Phenolsulphonphthalein excretion was 38 cc., or 12 per cent, in one-half hour; 20 cc., or 8 per cent, in one hour, and 70 cc., or 15 per cent, in two hours, making a total of 35 per cent excreted in two hours. A concentration test, June 5, showed a specific gravity of from 1.014 to 1.017 in the day specimens and a specific gravity of 1.018 in a volume of 550 cc. excreted during the night.

Stools: These were normal on two occasions except for a positive guaiac test.

Teleroentgenograms showed considerable cardiac enlargement, a high diaphragm and haziness of the lung bases as though from chronic passive congestion or a thin layer of fluid. The shape of the heart shadow suggested a mitral valvular lesion.

A tentative diagnosis of chronic cardiovascular renal disease, with subacute exacerbation due to chronic tonsillitis, was made. It was thought that the edema was not due to cardiac insufficiency.

Course Under Treatment.—Chart 2 shows graphically the relationships of the body weight, the intake and output of sodium chloride, the fluid intake and the urine volume. The stools were not measured, and at certain times considerable fluid was lost in the stools.

The diet furnished 2,500 calories, with 60 Gm. of protein, and a total salt intake of 1.5 Gm. daily.

The weight decreased at a regular, steady rate from June 5 to June 14. The urine volume ranged from 750 to 1,200 cc., which was less than the fluid intake. A small dose (20 units) of parathyroid extract-Collip, given intramuscularly, July 13, produced little change in the urine volume, body weight, or salt excretion, which had ranged from 2.5 to 4 Gm. daily. The serum calcium in blood drawn fifteen hours after the injection was slightly higher than on the previous examination; June 7, 6.8 mg. and June 14, 8 mg. per hundred cubic centimeters.

A second injection of 40 units of parathyroid extract-Collip given intramuscularly induced a prolonged diuresis lasting eight days, during which the urine volume exceeded the intake of fluids and the weight curve showed a sharp deflection downward. The daily salt excretion in the urine was greatly increased during this diuresis (from 4 to 13 Gm.). The blood serum calcium fifteen hours after the injection was not elevated, being only 6.9 mg. per hundred cubic centimeters.

A slight diuresis followed a third injection, June 26, of 40 units of the same extract. This was transient and removed the last detectable traces of edema and ascites. After July 1, the weight curve remained stationary, and the salt excretion fell to the level of intake, about 1.5 Gm., July 5. The serum calcium fifteen hours after the third injection was normal, 10.5 mg.

There was great subjective improvement. No disagreeable symptoms followed the injections except palpitation of the heart. The blood pressure, both systolic and diastolic, decreased somewhat. It was 120 systolic and 80 diastolic when the patient was discharged, July 10, 1927. Albuminuria was still marked, and many casts and leukocytes were seen in the sediment, but no red blood cells. The concentration test, July 10, showed lower specific gravities, from 1.005 to 1.012, but greater variation.

The patient returned to the care of her family physician, July 10, 1927, slightly improved. The prognosis for the duration of her life was felt to be poor. She was directed to restrict the salt intake to 1.5 Gm. daily and to ingest liberal quantities of water.

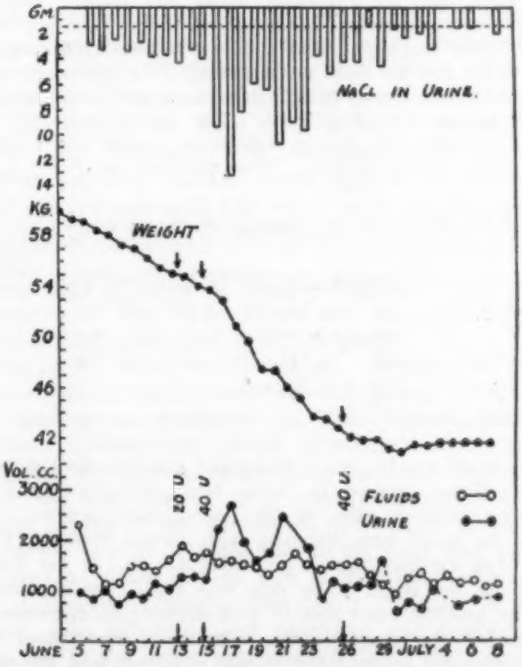

Chart 2 (case 2).—Chronic nephritis: effect of parathyroid extract on weight curve, volume of urine, and urinary excretion of salt; arrows indicate time of injections of the extract.

CASE 3.—*History.*—Mrs. B. C., a widow, aged 55, was admitted to the Strong Memorial Hospital, June 14, 1927, complaining of "dropsy." The history given was not particularly reliable. The patient was addicted to morphine. For six or eight weeks there had been a generalized, slowly increasing dropsy. Two weeks before, blebs had formed on the legs from which serum oozed continually. The urine became very scanty, though previously there had been nocturia. The ankles had been edematous periodically for fifteen or twenty years.

The patient had had marked chronic joint pains with "neuritis" for which morphine had been taken over a period of twelve or fifteen years, from 1 to 2 grains (0.065 to 0.130 Gm.) daily. In 1909, the left knee joint was resected for tuberculosis at the Buffalo General Hospital. The right hip joint was operated on twice for some unknown reason. She stated that she had "inflammatory rheumatism" at the age of 4, and frequently repeated sore throats. She had had typhoid in 1900 and influenza in 1918. There had been dyspnea on exertion for many years, and for the past six years she had required two pillows at night. The bowels were costive, requiring habitual catharsis. There was frequent bleeding from hemorrhoids, much flatulence, and gaseous eructations. She had had nocturia ever since childhood. There had been

frequent burning micturition and at times more severe attacks of "cystitis." The menses began at 15, and the menopause at 54. The periods were always irregular. She was married first at 18 years, and one child was stillborn. After two years she obtained a divorce and was remarried. There were no pregnancies by the second marriage. The family history was irrelevant.

Examination.—The patient was pale and sick-looking, with a massive generalized edema involving the whole body, including the face. The temperature was 36.5 C. Though the weather was sultry, the patient complained bitterly of cold, even when covered with three or four extra blankets. She was unable to sit up or to roll over unassisted. She was alert, cooperative and talkative. She vomited small amounts during examination. The skin was waxy with an ashen pallor, and there was no cyanosis. There were blebs on the legs from which enough serum exuded to keep the bed wet, necessitating the use of pads. There were palpable submaxillary nodes, but none of the other nodes were palpable. The bones and joints could not be examined on account of the edema. There seemed to be marked enlargement and deformity of the finger joints. No abnormalities of the head were noted. The hair was coarse and thick, and the eyebrows bushy and thick. There was marked subconjunctival edema of the eyes. The pupils were regular and reacted to light and in accommodation sluggishly. The retina and the disks were normal. The vision was normal to gross tests. No abnormalities were found in the ears. The nasal septum was perforated. The mouth revealed a few snags of teeth; the tongue was large, coated and tremulous, protruding in the midline. The pharynx was red, and the tonsils could not be seen. The chest was examined with difficulty. There seemed to be a bilateral hydrothorax with medium crackling râles in the intercapsular regions. Anteriorly the lungs were resonant, with normal vesicular breathing. The cardiac dulness extended 11 cm. to the left and 4 cm. to the right. The rate was rapid, the rhythm was regular, and the heart sounds were distant; no murmurs were heard, but the second aortic sound was accentuated. The blood pressure, as recorded by one observer, was 180 systolic and 140 diastolic, but after the edema of the arms had subsided, it was 120 systolic and 70 diastolic. The vessels were not palpable. The abdominal wall was edematous; shifting dulness was recorded, but no fluid wave. The abdominal viscera were not palpable. A pelvic examination was not made. The extremities, both upper and lower, were enormously edematous. There were operative scars on the right hip and the left knee. The patient was unable to move her legs on account of edema, and the deep reflexes could not be elicited.

TABLE 2.—*Chemical Analysis of the Blood in Case 3*

Date	Nonprotein Nitrogen	Serum Calcium	Total Protein, per Cent	Albumin, per Cent	Globulin, per Cent
6/16/27.....	69	7.6	5.5	...	...
6/27/27.....	35	...	...	...	...
7/ 6/27.....	40	...	5.0	...	...
7/11/27.....	32	8.6	5.0	2.5	2.5
7/20/27.....	...	7.0	...	...	...
7/21/27.....	38	8.3	...	...	...

Laboratory Examination.—Urine: Specimens of urine were cloudy and acid, with a specific gravity of 1.015. A heavy cloud of albumin was present. Benedict's reagent was not reduced. The sediment contained numerous leukocytes and red corpuscles, but no casts were seen.

Blood: Analysis of the blood showed: hemoglobin, 70 per cent; red blood cells, 2,960,000; white blood cells, 9,000. The differential count and the red blood corpuscles were normal. Platelets were abundant.

The Wassermann reaction was negative with both alcoholic and cholesterinized antigens. With Kahn's precipitation test a three plus reaction was obtained.

Course Under Treatment.—As the patient is still under observation, a complete analysis of the case is not yet possible. On admission a salt free diet (1.5 Gm. daily) was prescribed, with 60 Gm. of protein. The liquid intake was kept constantly at 1,500 cc. The weight on admission was 86 Kg. Between June 15 and June 23 it fell to 75 Kg. This loss of weight was not due to diuresis but to oozing from the skin of the legs and to occasional watery stools. The urine volume varied from 250 to 750 cc. a day.

June 23, the patient was given 25 units of parathyroid extract-Collip intramuscularly. The urine volumes rose slightly, from 900 to 1,500 cc., in the five succeeding days. The weight continued to fall to 71 Kg. on June 28. This decrease in weight was largely due to oozing from the legs.

From June 29 to July 5, the weight remained constant at 71 Kg. The urine volume decreased to from 400 to 700 cc. a day. The oozing from the legs ceased. For the whole period from June 15 to July 5, the salt excretion in the urine averaged less than 1.5 Gm. daily. The patient still had marked dependent edema and ascites.

July 5, the patient was given 45 units of parathyroid extract-Collip intramuscularly. The urine volumes for July 6 and 7 were incomplete. July 8, the urine volume was found to be 1,720 cc., which exceeded the intake, rising on July 10, when a further dose of 75 units of the parathyroid extract was given. The diuresis continued above the level of fluid intake, reaching a maximum of 2,800 cc., July 15, and then gradually decreasing to 800 cc., July 19.

During the interval from July 5 to July 19, the weight decreased from 71 Kg. to 62.8 Kg., chiefly by diuresis. The salt excretion in the urine rose markedly, the daily output varying from 3 to 10 Gm., with an average of 5.3 Gm. daily, on an intake of 1.5 Gm. Owing to the difficulty of obtaining blood from the veins of the arm, frequent observations of the serum calcium were not made. July 11, the calcium was 8.6 mg. per hundred cubic centimeters, fifteen hours after an injection of 75 units of parathyroid extract-Collip.

July 20, the calcium was 7 mg. at 8 p. m.; 80 units of parathyroid extract-Collip were given at 3 a. m., July 21. Five hours later, the calcium was 8.3 mg.; ten hours later, 7.2 mg. Fifteen hours later it was 7.8 mg. per hundred cubic centimeters.

This brings the record of the case up to the time of the preparation of this paper. No essential change in the patient's condition has been noted other than loss of edema and cessation of hematuria. The albuminuria is still marked, and many granular and hyaline casts are seen. The blood pressure is normal: 118 systolic and 65 diastolic. The vital capacity, July 10, was 1,600 cc. July 21, there was still considerable edema of the extremities. The edema is regarded as being partly of cardiac origin.

The tentative diagnoses are: chronic nephritis with edema; myocardial insufficiency; arteriosclerosis, general; arthritis deformans; probable syphilis; hypothyroidism (?) (basal metabolism tests are being deferred until the edema subsides).

NOTE.—Autopsy subsequently revealed renal amyloidosis, in addition to evidences of a chronic glomerulonephritis; tabes dorsalis, and multiple Charcot joints.

COMMENT

These three patients all had generalized edema associated with severe disturbance of renal function. In all three, the total protein of the serum was rather low. The first case was apparently one of acute nephritis with no evidence of hypocalcemia. A very small dose of parathyroid extract initiated a diuresis which continued until the edema was almost entirely gone, persisting long after the transient elevation of the blood serum calcium. Such an occurrence is not unfamiliar following the administration of other diuretics. I have observed a similar diuresis initiated by the administration of mild mercurous chloride as a purge. Once the outward movement of salt and water is started, the diuresis may continue.

The second and third patients also had generalized edema, low values for the total protein of the serum, and hypocalcemia. No evidences of tetany were seen in either of these patients. In each of these cases a diuresis was initiated by parathyroid extract, lasting for

several days after a transient increase in the serum calcium values. In case 2, salt restriction alone would probably have reduced the edema, but reference to chart 2 will show clearly that the loss of water and of salt by urinary channels was distinctly and sharply increased by the administration of parathyroid extract.

The mechanism of this action is an interesting subject for speculation and for further investigation. An explanation of the phenomena is not offered at this time. Some observations have been made on the action of parathyroid extracts in other edemas and in serum sickness, which will be reported subsequently. No clear-cut evidence of diuresis has been obtained when parathyroid has been given to nonedematous subjects, though this should receive further study.

SUMMARY

In three patients with generalized edema and nephritis, the administration of parathyroid extract-Collip initiated a diuresis of water and salt lasting several days after the transient elevation of the blood serum calcium.

112 Berkeley Street.

THE TRANSMISSION OF YELLOW FEVER TO MACACUS RHESUS

PRELIMINARY NOTE *

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The following is a preliminary report of studies on yellow fever carried out by the West African Yellow Fever Commission of the Rockefeller Foundation. A detailed report, covering the work presented here as well as other studies on this subject, will be published shortly.

During an epidemic of yellow fever at Larteh, Gold Coast, West Africa, in May, 1927, six Indian crown monkeys (*Macacus sinicus*) were inoculated with blood from patients with yellow fever. Five of these developed fever and died, while one did not show any reaction. From these five animals which died as a result of inoculation, three subinoculations were made into monkeys of the same species, two of which developed fever and recovered while one proved refractory.

The gross and microscopic pathology in the five animals which died was somewhat suggestive of yellow fever, but in view of the fact that one monkey failed to succumb to the original inoculation, and also that none of the subinoculations terminated fatally, it was felt that these animals were susceptible to yellow fever only to a moderate degree.

Circumstances prevented attempts to transmit the disease by means of mosquitoes.

A month later a shipment of *Macacus rhesus* monkeys was received and one of these animals was inoculated with blood from an African native with a mild case of yellow fever. This monkey developed fever and died five days after inoculation. Subinoculation was made from this animal into another rhesus monkey, and the resulting infection also terminated fatally. Subsequently this strain of the virus has been successfully carried through a large series of monkeys of this species and the work reported here has been accomplished with this strain.

The virus has been carried from monkey to monkey by inoculation of blood or serum thirty times with fatal issue in every case, except in one instance when the inoculated animal developed fever and recovered. In addition, twenty-two attempts were made to transmit the disease from monkey to monkey through mosquitoes. All of them proved successful. The course of the disease and the postmortem observations did not vary with the method of transmission.

Normal mosquitoes of the species *Aedes aegypti* which were fed on infected monkeys on the first or second day of fever invariably became infective. Although we have not yet attempted to determine the length of extrinsic incubation, we found that the mosquitoes were infective sixteen days after feeding on an infected animal and remained so until death. One mosquito produced a fatal infection in two monkeys eighty-five and ninety-one days after it had originally been infected by feeding. The mosquitoes used in these experiments were hatched from eggs in the laboratory.

In one experiment the virus was not transmitted from one generation of mosquitoes to another through the egg.

Serum of infected monkeys filtered through V and N grades of Berkefeld filters and through the Seitz asbestos filter produced fatal infections.

One-tenth cubic centimeter of convalescent serum, from a patient with a severe case of yellow fever occurring during an epidemic of this disease, protected monkeys against fatal doses of virulent blood as well as against the bites of mosquitoes known to be infected.

In our experiments with the rhesus monkeys the clinical course of the disease in most cases included an incubation period of from two to six days and a period of fever of from 104 to 105 F. for from one to five days, followed by collapse and death. During the febrile period, bile, albumin, and granular and hyaline casts appeared in the urine, and toward death the serum was positive for bile by the van den Bergh reaction. Spontaneous bleeding of the gums, increased by gentle pressure through the lip, was seen occasionally and in the absence of pyorrhea.

The necropsy observations have been fairly uniform, varying in degree more than in kind, and complicating causes of death were rare. The gross pathologic observations may be thus summarized:

Jaundice.—Present in the conjunctivae over the tarsal plate, in the subcutaneous tissue and fat, in the aorta, and often in the skin of the face, buccal mucosa, trachea and prepuce.

Liver.—Extreme pallor; yellowish brown, buff, or cream color (the so-called boxwood color); normal or soft, friable consistency, and normal weight.

Kidneys.—Pallor, jaundice, swollen cortex and increased weight.

Spleen.—Firmness, rounded edges, small malpighian corpuscles and increased weight.

Lungs.—Petechial hemorrhages on pleural surface and less commonly in lung tissue.

Stomach.—In about one third of the cases, flecks and streaks of chocolate brown and partially altered blood and sometimes masses of black vomitus, and in a few cases petechial hemorrhages and congestion of the mucosa.

* The studies on which this paper is based were conducted with the support and under the auspices of the International Health Division of the Rockefeller Foundation.

* Toward the close of the series of experiments covered in this report, the senior author, Dr. Stokes, fell a victim to the disease under investigation. The loss of an investigator of his scientific ability and devotion is deplored by his colleagues.

Small Intestine.—Partially altered blood in several monkeys and occasionally congestion and diffuse hemorrhage of the mucosa.

Bladder.—Greenish yellow urine giving positive tests for bile and containing albumin, between 1 and 4 Gm. per liter, and showing hyaline and granular casts.

The organs showing less significant or no gross pathologic changes are the heart, suprarenal glands, pancreas, lymph nodes and brain.

The outstanding features of the microscopic pathologic changes are as follows:

Liver.—Extreme fatty degeneration; necrosis often limited to the midzone but commonly extending to central vein and portal areas, leaving only a fringe of fatty but intact cells about these structures; many liver cells with acidophilic granular cytoplasm; liver cell nuclei often small and acidophilic or karyorrhectic, but commonly poorly stained or wanting; polymorphonuclear and endothelial leukocytes in sinusoids and often in necrotic cells; extravasated red blood cells and only rarely small areas of frank hemorrhage.

Kidney.—Extreme fatty degeneration of epithelial cells; general cloudy swelling and less extensive necrosis of epithelial cells of cortical convoluted tubules without reacting inflammatory cells; nuclei of these cells commonly poorly stained, often pyknotic and sometimes wanting; débris in tubules; hyaline and granular casts in straight and collecting tubules; and occasionally masses of blue or blue-gray bodies in the same tubules resembling "lime-casts."

Heart.—Fatty degeneration of muscle fibers in most specimens.

Spleen.—Congestion; small lymph nodules usually without germinal centers; necrosis of nodules and germinal centers and necrotic areas usually infiltrated with phagocytic endothelial leukocytes; increased numbers of these reacting cells in the pulp and sinusoids and especially about the nodules; and mildly increased numbers of scattered polymorphonuclears.

Lung.—Small areas of recent hemorrhage without reacting cells in numerous specimens.

Stomach.—In most specimens, nothing significant; in others, congestion of mucosal capillaries and occasional small area of extravasated red blood cells.

Lymph Nodes.—Germinal centers often wanting and, when present, often necrotic and infiltrated with phagocytic endothelial leukocytes.

Suprarenal Glands.—Cortical cells of several specimens necrotic and infiltrated with polymorphonuclear leukocytes.

Tissues showing no demonstrable microscopic pathologic changes are the brain, pancreas and voluntary muscle.

Cultures of the blood of infected monkeys have been negative in ordinary and leptospira mediums. Although an exhaustive search of monkey tissues has not been completed, no leptospiras have yet been found in Levaditi preparations.

At the end of September two additional strains of the virus were obtained, both from fatal cases of yellow fever in Europeans, in which the diagnosis was verified by postmortem observations. Blood from each of these patients injected into rhesus monkeys produced fatal infections. From one of these two cases, the disease was also transmitted to monkeys by means of mosquitoes. The clinical course of the disease and the pathologic changes produced by these two strains have been similar to those caused by the strain which originated from a mild case in a native and with which most of our work has been done.

The evidence furnished by the strain of virus from a mild case, briefly reported in this note, and confirmed by strains from the verified cases of yellow fever, indicates that this disease has been successfully transmitted to *Macacus rhesus.*

COMMERCIAL PREPARATIONS OF DIPHTHERIA TOXIN-ANTITOXIN

PROTECTING VALUE IN THE NURSES OF COOK COUNTY HOSPITAL *

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Between Sept. 2 and Dec. 17, 1926, nine cases of diphtheria developed among the nurses of the Illinois Training School, which supplies the Cook County Hospital of Chicago with nurses. Five cases developed in the last two weeks of November. The impression gained during this outbreak, that toxin-antitoxin as it was then being administered was not affording adequate protection against diphtheria, led to the present study. It includes the twenty-nine cases of diphtheria occurring among the nurses from Jan. 1, 1926, to June 8, 1927, a period of about seventeen months.

From Dec. 1, 1925, to Sept. 1, 1926, all incoming students had received three 1 cc. injections of diphtheria toxin-antitoxin. The material used was a commercial preparation obtained from the Illinois state health department. It was prepared under a license from the Hygienic Laboratory of the United States Public Health Service. The immunizing treatment had been given to all new nurses without a Schick test before or after the course of injections.

Dec. 17, 1926, in order to control the serious diphtheria situation then existing, Schick tests were done on the entire nursing group. In this way a check-up on the efficiency of the toxin-antitoxin administered up to that time was afforded. Diluted diphtheria toxin, 0.2 cc., was injected intradermally on the volar surface of the right forearm, and the control test (0.2 cc. of the same material which had been heated ten minutes in boiling water) was made at a corresponding point on the left forearm.

TABLE 1.—*Results of Schick Tests Made Dec. 17, 1926*

	Group 1 Three Doses of Toxin-Antitoxin Had Been Given Within 3 Years of and Longer Ago Than 3 Months Prior to Time of Tests		Group 2 No Toxin-Antitoxin Had Been Given	
	Number	Per Cent	Number	Per Cent
Schick test positive	43	67.2	102	58.3
Schick test negative	21	32.8	73	41.7
Total	64		175	

RESULTS OF SCHICK TESTS

Table 1 shows the results of these tests. The first group was composed of the nurses who had received three toxin-antitoxin injections within three years and prior to three months before the tests were made. The second group consisted of graduate nurses, affiliate nurses, orderlies and female attendants who had not been immunized. In the first group, 67.2 per cent were found susceptible to diphtheria after the attempted immunization, as against 58.3 per cent in the control group which had not had toxin-antitoxin.

The average age of the second group was four or five years above that of the first group. Since Schick tests had not been made before immunization, and the control group showed 41.7 per cent negative without immunization, the 32.8 per cent negative in the

* From the Scarlet Fever Committee and the John McCormick Institute for Infectious Diseases.

immunized group cannot be credited to toxin-antitoxin administration. The persistence of susceptibility to diphtheria indicated by Schick tests in the group that had received the three doses of toxin-antitoxin was confirmed by the occurrence of clinical diphtheria in this group.

Twelve cases, or 46.2 per cent of those cases of which we have records, occurred in those who had not had toxin-antitoxin. Since this group was much larger than the "protected" group, as can be seen from table 1, it is evident that the percentage of those contracting diphtheria was greater in the "protected" group than in the "unprotected." The exposures of the two groups were practically the same, most of the cases developing in the children's wards in the main hospital rather than in the contagious disease hospital.

TABLE 2.—*Incidence of Diphtheria in All Groups*

Total number of cases of diphtheria among Cook County Hospital nurses (Jan. 1, 1926, to June 8, 1927)	29
Number having had 3 doses of toxin-antitoxin within 2 years and prior to 3 months before onset	9
Number having had 0 doses of toxin-antitoxin within 2 years and prior to 3 months before onset	1
Number having had 3 doses of toxin-antitoxin within 3 months of time of onset	4
Number having had no toxin-antitoxin or previous diphtheria	12
Number in which no data as to toxin-antitoxin administration were available	3

In three cases occurring prior to Sept. 1, 1926, no data as to previous immunization were available.

INCIDENCE OF DIPHTHERIA IN THE GROUP WHICH HAD RECEIVED THREE DOSES OF TOXIN-ANTITOXIN

Consideration of table 2 reveals that of twenty-nine cases of diphtheria occurring among the nurses of the Illinois Training School between Jan. 1, 1926, and June 8, 1927, nine were in those who had received three doses of toxin-antitoxin prior to three months from the time of onset and within two years of that time. One (case 9) was in a nurse who had received two such courses, the first being seven months before her attack and the second four months before that time.

The diagnoses were made on the usual clinical observations of membrane in the throat or nose, rapid pulse, and positive culture for diphtheria bacilli. In all cases, the diagnoses were confirmed by the physicians at the Cook County Contagious Disease Hospital.

SUMMARY OF CASE HISTORIES

CASE 1.—Miss K. was given three doses of toxin-antitoxin, during December, 1925, and January, 1926, the last dose being administered, Jan. 12, 1926. A diagnosis of tonsillar diphtheria was made, March 27, 1926. She had had a previous attack of diphtheria. There were no complications.

CASE 2.—Miss C. was given three doses of toxin-antitoxin in January, 1926. A diagnosis of pharyngeal diphtheria was made, Oct. 4, 1926. The course of the disease was complicated by myocarditis. She had had a previous attack of diphtheria.

CASE 3.—Miss W. was given three doses of toxin-antitoxin in June, 1926. A diagnosis of tonsillar diphtheria was made in November, 1926. The attack was complicated by myocarditis. She had had a previous attack of diphtheria.

CASE 4.—Miss H. was given three doses of toxin-antitoxin during June and July, 1926. A diagnosis of pharyngeal diphtheria was made, Dec. 11, 1926. There were no complications.

CASE 5.—Miss H. was given three doses of toxin-antitoxin in February, 1926. A diagnosis of tonsillar diphtheria was made, Jan. 24, 1927, with myocarditis as a complication.

CASE 6.—Miss H. was given three doses of toxin-antitoxin during August and September, 1926. A diagnosis of pharyngeal diphtheria was made in February, 1927. There were no complications.

CASE 7.—Miss P. was given three doses of toxin-antitoxin in October, 1925. A diagnosis of pharyngeal diphtheria was made, April 13, 1927. There were no complications.

CASE 8.—Miss J. was given several doses of toxin-antitoxin during October, November and December, 1926, at the Henrotin Hospital, Chicago. The patient did not recall the exact number of doses. They had been less than 1 cc. because she had had very severe reactions. More than three injections were given, comprising the total dosage. A diagnosis of tonsillar diphtheria was made, April 13, 1927. There were no complications.

CASE 9.—Miss F. was given three doses of toxin-antitoxin during August and September, 1926. Three more doses of toxin-antitoxin were given in January, 1927. A diagnosis of tonsillar diphtheria was made, May 5, 1927. There were no complications.

CASE 10.—Miss M. was given three doses of toxin-antitoxin in January, 1927. A diagnosis of tonsillar diphtheria was made, June 8. There were no complications.

For completeness, the cases in which the course of toxin-antitoxin injections was finished, but not three months before the onset of diphtheria, are also recorded. These are not included as cases in which the toxin-antitoxin failed to protect because this measure is not supposed to insure complete immunity until three months after the last dose.

CASE 11.—Miss J. was given three doses of toxin-antitoxin in January, 1926, the last dose being administered, Jan. 23, 1926. A diagnosis of tonsillar diphtheria was made, March 22, 1926. The attack was complicated by myocarditis.

CASE 12.—Miss A. was given three doses of toxin-antitoxin in August, 1926, the last dose being administered Aug. 15, 1926. A diagnosis of tonsillar diphtheria was made, Oct. 5, 1926. There were no complications.

CASE 13.—Miss H. was given three doses of toxin-antitoxin in December, 1926. A diagnosis of tonsillar diphtheria was made, Jan. 8, 1927, complicated by myocarditis.

CASE 14.—Miss N. was given three doses of toxin-antitoxin in March, 1926, at Norfolk, Neb. A diagnosis of pharyngeal diphtheria was made, April 16, 1926. There were no complications.

CHANGE IN PLAN OF IMMUNIZATION AT ILLINOIS TRAINING SCHOOL

Since Jan. 1, 1927, all the incoming nurses with positive Schick tests have received five full doses of toxin-antitoxin at weekly intervals. Those who received three doses during 1926 and who showed a positive Schick test on the check-up, Dec. 17, 1926, have received three more full doses at weekly intervals. Schick tests are being done three months after the completion of these courses.

We were just starting the tests of potency when the new routine was adopted. For the first month, we used a commercial preparation which we had reason to hope was as potent as the claims made for it, but which we had not tested. It was lot 4 of preparation B, which our tests later revealed to be below even the "permissible variations" of the Hygienic Laboratory requirements in potency. Eighteen nurses who received three doses of toxin-antitoxin in 1926 still showed positive Schick tests, Dec. 17, 1926. They received three more injections of preparation B in January, 1927. Nine, or 50 per cent, of these had negative Schick tests three months later.

We are now giving five doses of preparation C to all incoming students. This is the preparation which is stronger than the ideal toxicity recommended by the Hygienic Laboratory, but no serious reactions have occurred.

TESTS OF COMMERCIAL PREPARATIONS OF TOXIN-ANTITOXIN FOR POTENCY

Immunization against diphtheria with toxin-antitoxin is a measure the value of which is established by too great a volume of authentic evidence to be questioned. However, the persistence of positive Schick tests in 67.2 per cent of cases, and the occurrence of clinical diphtheria in the group that had received toxin-antitoxin, were evidences of failure to protect against diphtheria. This is not an infrequent occurrence. Gatewood and Baldridge [1] and Stewart,[2] in discussing serum sensitization through toxin-antitoxin administration, cite cases in which diphtheria occurred in persons who received three doses of diphtheria toxin-antitoxin more than three months before the onset of diphtheria and within three years of that time.

A possible explanation of the disappointing results was that the preparations used were not sufficiently potent or the dosage was too low. The toxin-antitoxin mixture used contained 0.1 L + dose of toxin per cubic centimeter, the dosage with which Schroeder and Park,[3] in 1923, obtained good results with a course of three doses. This dosage is also recommended by McCoy, Rosenau and Park.[4] It has almost entirely supplanted the old 3.0 L + dosage in commercial preparations. If this dosage was adequate, another possibility was that the preparations used were not as potent as represented.

Although it was too late to test the potency of the preparations actually used on the first group of nurses, it was deemed advisable to test several commercial preparations of toxin-antitoxin, according to the method adopted by the Hygienic Laboratory of the U. S. Public Health Service. These regulations are as follows:

> The ideal toxicity of diphtheria toxin-antitoxin mixture should be such that, when five human doses are injected into each of five guinea-pigs weighing 300 Gm., two of these five dose pigs shall die in from four to ten days and the other three shall die of diphtheria paralysis in from fifteen to thirty-five days. Of five pigs receiving one human dose, one shall die of diphtheria paralysis in from fifteen to thirty-five days and the other four should survive. As permissible variations from this toxicity, guinea-pigs may be used weighing from 250 to 350 Gm., the weight being scattered throughout this range for any set of guinea-pigs on the same dose. Of the pigs on five human doses, from four to none may die acutely, more than 50 per cent of the remainder dying of paralysis, and of the pigs on one human dose, three to none may die of paralysis.

Because of a shortage of guinea-pigs, only the five dose test was carried out. In three instances which are indicated in table 3, less than five guinea-pigs were used because no more could be procured at the time the tests were done. Preparation A is the commercial product which was supplied free by the state of Illinois and was obtained from the Chicago city health department. The other preparations were purchased from the branch offices of the manufacturers in Chicago. When not used on the day purchased, they were stored in the refrigerator. In all except lot 1 of preparation A, the tests were done at least several weeks before the expiration of the potency date. In this one instance, they were made two days after the expiration date.

It will be observed that no lot was of ideal toxicity, although lots 2 and 3 of preparation A and all lots of preparation C closely approximated it. Although the latitude allowed by "permissible variations" in the Hygienic Laboratory requirements is very great, three lots were definitely less potent than the regulations require.

TABLE 3.—*Results of Inoculation of Guinea-Pigs with Various Commercial Preparations of Toxin-Antitoxin*

Preparation	No. of Guinea-Pigs	Approximate Weight	Dosage	Results	Conclusions
Preparation A					
Lot 1	5	300 Gm. each	5 cc. each	All died of paralysis between the twenty-fifth and thirty-fifth days	Toxicity not ideal but within permissible variations
Lot 2	3	270 Gm. each	5 cc. each	1 died on third day; 2 died on fourth day; typical lesions	Stronger than ideal
Lot 3	5	300 Gm. each	5 cc. each	3 died on fifth day; 1 on sixth day and 1 on eighth day; typical lesions	Stronger than ideal
Preparation B					
Lot 1	5	270-325 Gm. each	5 cc. each	3 died of paralysis on twenty-sixth to twenty-ninth day; 1 died of paralysis on thirty-seventh day; 1 alive on one hundred and twentieth day has recovered from paralysis	Toxicity not ideal; within permissible variations
Lot 2	5	280-300 Gm. each	5 cc. each	All died of paralysis between nineteenth and twenty-fifth days	Toxicity not ideal; within permissible variations
Lot 3	5	290-305 Gm. each	5 cc. each	3 died of paralysis between twenty-fourth and twenty-eighth days; 2 living on seventy-third day, having recovered from paralysis	Toxicity not ideal; within permissible variations
Lot 4	5	270-320 Gm. each	5 cc. each	All living on fifty-eighth day; 2 have recovered from paralysis	Toxicity less than that allowed by permissible variations
Preparation C					
Lot 1	5	280-310 Gm. each	5 cc. each	3 died on fourth and fifth days, typical lesions; 1 died of paralysis on tenth day; 1 died of paralysis on fourteenth day	Slightly stronger than ideal
Lot 2	5	280-310 Gm. each	5 cc. each	All died on fourth and fifth days; typical lesions	Stronger than ideal
Lot 3	5	260-310 Gm. each	5 cc. each	All died on fourth to seventh day; typical lesions	Stronger than ideal
Preparation D					
Lot 1	4	320 Gm. each	5 cc. each	2 died of paralysis on twenty-eighth and thirty-fourth days; 2 living on seventy-third day	Toxicity not ideal; within permissible variations
Lot 2	4	320 Gm. each	5 cc. each	All living on seventy-first day; no paralysis	Toxicity less than allowed by permissible variations
Lot 3	5	290-300 Gm. each	5 cc. each	1 died of paralysis on forty-sixth day; others living on sixty-first day	Toxicity less than allowed by permissible variations

COMMENT

The value of toxin-antitoxin administration in protecting against diphtheria is well established by an abundance of reliable evidence. The results here outlined emphasize, however, that to obtain good results the potency of commercial preparations employed must be carefully controlled.

From the results reported here, the necessity for Schick retests three months after the last dose of toxin-antitoxin and more immunizing doses when they are indicated is evident.

1. Gatewood, W. E., and Baldridge, C. W.: Tissue Hypersensitiveness Following the Administration of Toxin-Antitoxin, J. A. M. A. **88**: 1069 (April 2) 1927.
2. Stewart, C. A.: Serum Sensitization Resulting from Diphtheria Toxin-Antitoxin Administration, J. A. M. A. **88**: 1221 (April 16) 1927.
3. Schroeder, M. C., and Park, W. H.: Comparative Merits of Old and New Preparations of Diphtheria Toxin-Antitoxin: Results of Preliminary Tests with Toxoid, J. A. M. A. **81**: 1432 (Oct. 27) 1923.
4. McCoy, G. W.; Rosenau, M. J., and Park, W. H.: Report on Frozen Toxin-Antitoxin Preparations, J. A. M. A. **82**: 567 (Feb. 16) 1924.

Wide variations were found in the potency of commercial preparations now on the market, and in some instances there was even considerable difference among the lots made by the same manufacturer. Banzhaf [5] has pointed out that the new mixture containing 0.1 L+ dose per cubic centimeter deteriorates with age more rapidly than the 3 L+ dose preparation. In the tests on preparations B and D, the expiration of potency dates were as far removed from the dates of the tests as in the cases of preparations A and C. The time element does not account for the difference in potency here. When large numbers of toxin-antitoxin immunizations are to be done, it is advisable to make tests for potency on the particular lot of toxin-antitoxin to be used before the work is undertaken.

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JEJUNOSTOMY, PRIMARY AND COMPLEMENTAL *

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Distention is the symptom that demands immediate attention in late cases of obstruction of the bowels, whether the cause is mechanical, inflammatory or disturbed innervation. The more distended the abdomen is, the more serious the condition. If distention is relieved, the patient is in the safety zone.

The operation for removing the cause may be done later when the patient's condition warrants. This plan of treating obstruction of the bowels by a two stage operation may be likened to the plan of treating prostatic obstruction first by draining the bladder and later by removing the cause.

There are two outstanding reasons for the mortality of obstruction of the bowels: First, the operation is done under ether anesthesia, whether it is a simple enterostomy or an operation to relieve the obstruction, together with an enterostomy. Ether narcosis practically inhibits peristalsis for thirty or forty hours. It is strange that a surgeon who performs an operation (as enterostomy) for the sole purpose of emptying the small intestine will at the same time administer a drug that paralyzes peristalsis, and then wonder why the intestine will not drain through the tube. Ether narcosis is without question the outstanding cause of the high mortality. Another cause is the attempt to drain a distended bowel which has no contractile power; if it had, the pressure on all sides would kink the ends of the emptied segment and cause another obstruction.

The stomach and colon may be emptied mechanically. Many methods have been used to empty the small intestine mechanically, but there is only one efficient method of emptying the small intestine and that is by peristaltic waves.

There is normally a forward and a reverse peristalsis. In obstruction of the bowels, the forward peristaltic wave is stopped at the obstruction and there is a distention. As this condition continues there is a progressive distention of the bowel from the seat of obstruction toward the stomach. Muscle tissue stretched beyond a certain point loses its contractile power. This holds true in a distended intestine. In a normal person, the reverse peristaltic wave is unnoticed. In obstruction, it is stimulated and exaggerated. This applies particularly to that part of the intestine above the greatly distended bowel which aspirates the contents from the distended or paralyzed portion. In this way, nature tries to empty the intestine. The cue is to take advantage of the peristaltic waves by introducing a tube high up in the small intestine where the reverse peristalsis is most active and the intestines are least distended. A tube introduced into the jejunum within the first 10 or 15 inches under a local anesthetic will empty the small intestine promptly. Clinical observation has demonstrated the correctness of this hypothesis.

JEJUNOSTOMY TECHNIC

The use of a local anesthetic is imperative for obvious reasons. A short incision is made through the upper left rectus muscle. Next, the upper end of the jejunum is located. The ungloved index finger is introduced and the bifurcation of the abdominal aorta is located. Normally, the jejunum is within an inch above it, to the left. The intestine may be pushed up several inches. By sweeping the finger from the aorta to the left, it will be possible to find the beginning of the jejunum. A pair of ring forceps is introduced and a loop of the bowel is delivered. A purse-string suture of silk is inserted, the bowel is opened and a drainage tube is inserted for 2 or 3 inches, with the point away from the stomach. A retaining suture is put in and the purse-string suture is tied. Another purse-string suture is inserted three-fourths inch from the tube and tied, as the tube is pushed in; then the bowel is returned to the abdominal cavity. The bowel should not be sutured to the abdominal wall.

My personal experience in treating obstruction of the bowels by a high jejunostomy performed under a local anesthetic dates from Jan. 21, 1916. A patient was brought into St. Elizabeth Hospital in a moribund condition. I decided on a gastrostomy as a temporary measure to relieve the depressing effects of distention and vomiting. An incision was made through the upper left rectus muscle under a local anesthetic. Omentum, transverse colon or stomach were neither visible nor palpable, the pressure from the distended intestine having forced these into the thoracic cavity. I was in a quandary. Since it was impossible to drain the stomach, I decided to drain the intestines by inserting a tube in the upper end of the jejunum. Drainage was immediate and profuse; abdominal distention disappeared in a few moments, and the patient was able to take a deep breath. After a few deep inspirations, she expressed herself as feeling "all right." This change from a state of imminent dissolution to one of well being was the most dramatic incident I had seen in an operating room.

In an experience of more than eleven years I have used this method many times for obstruction or postoperative ileus and allied conditions with most gratifying results. A patient in an apparently dying condition from untreated obstruction attains a state of apparent convalescence in a few moments after a jejunostomy performed under a local anesthetic. The only logical interpretation is that the terminal cause of the death is asphyxia. If death were due to a toxin, getting rid of the contents and gas and allowing the diaphragm to function would not change the picture so quickly.

After noting the prompt response of a patient to high jejunostomy in a few late cases of obstruction of the bowels, it occurred to me that a tube introduced into the upper end of the jejunum at the close of some

5. Banzhaf, E. J.: Gradual Decrease of Active Immunizing Value of Toxin-Antitoxin Mixtures Stored During One Year, J. Immunol. 9: 451 (Nov.) 1924.

* Read before the Section on Surgery, General and Abdominal, at the Seventy-Eighth Annual Session of the American Medical Association, Washington, D. C., May 20, 1927.

serious abdominal operation, as resection of the bowel, perforated ulcer, gastro-enterostomy or peritonitis, should prevent a postoperative ileus. This I have found to be true. It fulfils two major requirements: First, it prevents ileus and eliminates gas distention and gas pains, and, second, it is a means for the introduction of fluids. Proctoclysis and hyperdermoclysis are feeble substitutes for a tube in the jejunum as a means of getting fluids into the patient. I have given the name of "complemental jejunostomy" to this procedure. I feel that this operation (complemental jejunostomy) is one that should be known and used by every surgeon, because its field is so much larger than jejunostomy for an obstruction.

Recent investigators have found anaerobic bacilli in the intestines which they assert accounts for gaseous distention. Other investigators state that swallowed air plays a rôle in the production of postoperative distention and gas pains. They recommend an indwelling rubber tube introduced into the stomach to act as an outlet for intestinal gases. My clinical observation would compel me to take issue with the swallowed air theory of gas pains. In the first twenty-four hours following a laparotomy, gas pains do not ordinarily occur. It is in the second twenty-four hours that complaint is made of them. My interpretation is that gas pains are due to a meeting of the reverse and forward peristaltic waves, causing a pull on the mesentery.

Another clinical observation is that for the first twenty-four hours following abdominal operation with complemental jejunostomy under ether, drainage from the tube and gas pains are absent, while after twenty-four hours there is intermittent drainage. This can be demonstrated by putting the tube in a bottle, which shows gas bubbles appearing at frequent intervals. This demonstrates that there is little or no peristalsis the first twenty-four hours, after which time there is reverse peristalsis becoming more active for the next few days, and throughout this period there will be little or no distention of the abdomen.

If complemental jejunostomy serves no other purpose than to prevent postoperative ileus, distention and gas pains, it is a valuable adjunct. In addition, there is no other method of introducing fluids and nourishment into the body that is even comparable to it.

Security Mutual Life Building.

ABSTRACT OF DISCUSSION

DR. CHARLES GORDON HEYD, New York: I am very glad that Dr. MacKinnon has added to the paper he presented a few years ago the idea of selective or complemental jejunostomy. The operation will present two great clinical indications: the indication of emergency—obstructive conditions; and the indication for selective or complemental jejunostomy. In the mechanical obstructive conditions, whether there is vascular occlusion or not, there are present distention, inhibition of peristalsis and a stimulation or exaggeration of reverse peristalsis. The surgical physiology is that of retention of toxic material under pressure. The surgical indication is drainage with immediate relief of pressure. In the selective jejunostomy, one has time to do the operation deliberately. There are many conditions in which this operation is indicated: first, in cases of gastric resection, in which the loss of gastric wall is so great as to prohibit an excellent or anatomic closure; second, in ulcerative conditions in which it is desired to feed the patient over a long period of time; third, to take the strain off the suture line in duodenal perforations or gastric resections, and finally, in that great group of cases in which one wishes to make a detour in the alimentary channel, because of obstructions between the mouth and the stomach, such as infiltrated stenosis, or stricture, or carcinoma. This offers an indication for operation more frequently than we have been accustomed to use it. I think that the theory of Dr. Macrae and of Dr. MacKinnon as to the essential usefulness of this operation is sound. It is a simple operation and has been neglected in the routine of general surgical practice.

DR. J. H. WOOLSEY, San Francisco: I agree with Whipple that the toxicity of the bowel content is greater the higher one goes in the gastro-intestinal tract, and second, that death in many cases of peritonitis is, in fact, due to a potential intestinal obstruction. This has been demonstrated to me personally at autopsy, and by a study of clinical symptoms. Handley of London has well described this occurrence of a local peritonitis with an associated potential intestinal obstruction often leading to death. As to the treatment of this potential intestinal obstruction: Some years ago, Jutte, an internist in New York, described a tube for use in analysis of gastric and duodenal content. It is of the caliber of the usual duodenal tube, approximately 6 feet in length, perforated for a distance of 15 cm., and weighted by inserting and tying in the perforated end two BB shot. The tube, as Matas suggested, is passed by way of the nostril down into the stomach or, if possible, into the duodenum. Then the extraction of the toxic upper gastro-intestinal content is withdrawn at intervals, and, as suggested by Haden and Orr, the stomach is washed with sodium chloride. During the three years that we have employed this tube, we have found that it accomplished all that is claimed for this "life-saving operation—jejunostomy." In addition, the administration of sodium bicarbonate and dextrose subcutaneously and intravenously, respectively, is considered very important. Some years ago Bassler said, speaking on the use of the Jutte tube, "If I leave no message with you but the use of trans-duodenal lavage in postoperative ileus, I feel that my paper has not been in vain. Its employment is of distinct advantage and will bring happiness to you."

DR. DONALD MACRAE, JR., Council Bluffs, Iowa: One point ought to be brought out more clearly. We have used promiscuous intestinal drainage for many years, but we find that high jejunostomy is far superior to drainage. Dr. Horsley says that if there is obstruction at the sigmoid, he drains the large intestine. Of course, we say so, too, but we use an ordinary rectal tube instead of making an artificial anus. It can be inserted in three or four minutes, and when the tube is taken out, if the obstruction is relieved, the condition clears up in a few days; if it is necessary to leave it open, one will be surprised to see the mucosa growing up, forming the most beautiful artificial anus imaginable. This can be done in one-tenth the time it takes to make the regulation artificial anus. Obstruction of the large intestine does not result in death for a long time because it does not cause real toxemia. The patient has a lot of pain and the abdomen is distended. If a tube is placed above the obstruction the patient will get well. If one does not do this, the poison goes on through the ileocecal valve into the small intestine, toxemia develops and the patient dies. At that time, if only the large intestine is drained the patient will die. If the jejunum as well as the large intestine is drained, the patient will get well. An obstruction of the large intestine seldom kills until after it has passed through into the small intestine.

Calories.—Mere shortage of total calories is a common cause of malnutrition and underweight. It is often assumed that the appetite will insure the intake of a suitable number of calories; and in many instances it will. But appetite is easily perverted; it is more a matter of habit than many realize. The child who learns to drink coffee in infancy may satisfy his appetite with that and consequently not consume enough total food to satisfy the needs of his body. Likewise, the child who eats on the impulse of the moment and not at regular and suitably long intervals may fall short of the needed energy allowance. Moreover, the child who becomes undernourished through bad habit of living loses his keen desire for food and consequently goes progressively downward.—Report, Joint Health Committee, Health Education, p. 37.

INVESTIGATION OF PROPOSED COLORIMETRIC METHOD FOR TITRATION OF DIPHTHERIA TOXINS*

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Mishulow and Krumwiede [1] have recently suggested a colorimetric method for the estimation of the strength of bacterial toxins by means of titration with auric chloride, approximately as follows:

Two cubic centimeters of a 1:4 dilution of the toxin sample is added to each of a series of micro test tubes containing graded volumes of 1 per cent auric chloride.

The contents of the tubes are mixed and warmed for forty minutes at 50 C.

At the end of this interval, the mixtures containing the smallest volumes of auric chloride are observed to have undergone little notable change. Those representing the largest volumes of the reagent may have produced heavy flocculi. Intermediately, some of the mixtures may have developed a blue coloration (by transmitted light), and some a purple coloration, and some a green.[2] The volume of auric chloride that has produced the most intense green color is presumed to be indicative of the toxicity of the sample in minimum lethal doses per cubic centimeter.

We have investigated this method, and have come to the following conclusions:

1. The volume of auric chloride required to produce the indicative, green color with a given dilution of toxin is determined by the acid-neutralizing capacity of the toxin rather than by its toxicity. A series of diphtheria toxin preparations was titrated with auric chloride by the Mishulow-Krumwiede method and no correlation found between the known toxicities and those indicated by the titrations. One per cent auric chloride is a strongly acidic solution, and it was suspected that the separate tubes in each titration might have varied widely in hydrogen ion concentration. Accordingly, after the titrations had been completed, the tubes were centrifugalized to remove the colors of the gold dispersions, and the p_H of the supernatant solutions was estimated colorimetrically. In every titration, regardless of the source or toxicity of the toxin preparation, the maximum green coloration appeared to have been produced at a p_H proximal to 4.5 (table 1).

2. The green color produced on incubation of mixtures of toxin and auric chloride is due, not to the content of pure toxin principle but to associated, unspecific substances.

TABLE 1.—*Significance of p_H of Indicating Mixture for Production of a Green Color on Incubation of Bacterial Toxins with Auric Chloride*

Number	Diphtheria Toxin, 1 Cc. of a 1:4 Dilution	Volume in Cc. of 1% Auric Chloride Added, and Color Produced after Incubation at 50 C.								Toxicity of the Undiluted Toxin in M. L. D. per Cc., According to:	
		0.00	0.08	0.10	0.12	0.14	0.16	0.18	0.20	Auric Chloride Titration	Biologic Analysis*
1	1 hour†	..	trG‡	G	GG	GGG	P	P	..	(666)§	666
1a	1:4 dilution of 1 with broth, 2 hours	..	?	trG	GG	GGG	G	trG	..	2,666	666
1b	1:16 dilution of 1 with broth, 2-2.5 hours	..	?	trG	PB	BGG	trG	?	..	10,666	666
	p_H of the mixtures	8.3	5.5	4.9	4.6	4.4	4.2	4..0			
2	0.7 hour	..	..	trG	G	G	GGG	?	..	760	400
3	0.7 hour	..	..	trG	G	G	GGG	P	..	760	500
	p_H of the mixtures	8.3	6.2	5.5	5.0	4.7	4.4	4.2			
4	(From coli-fermented medium), 1-1.3 hours	..	..	trG	G	G	GG	GGG	?	840	300
5	(From coli-fermented medium), 1.3 hours	..	..	trG	G	G	G	GGG	P	840	320
	p_H of the mixtures	8.3	6.4	5.7	5.3	4.9	4.7	4.4	4.2		

* The minimal lethal dose was determined in guinea-pigs by the standard Ehrlich-Behring procedure.
† The time interval required for the production of maximum color.
‡ trG, G, GG, and GGG refer to increasing intensities of green coloration; B is blue; P is purple.
§ Basis for calculation.

TABLE 2.—*Fraction of Diphtheria Toxin Preparations Responsible for Green Color Production on Incubation with Auric Chloride*

Number	Toxin Fraction, 1 Cc.	Volume in Cc. of 1% Auric Chloride Added, and Color Produced after Incubation at 50 C.							Toxicity of the Fraction in M. L. D. per Cc. According to:	
		0.00	0.10	0.12	0.14	0.16	0.18	0.20	Auric Chloride Titration	Biologic Analysis*
1	The acidified toxin before centrifugalization, 0.7-1.0 hour*	..	..	G*	G	GG	GGG	..	(100-125)*	100-125
2	The supernatant fluid after centrifugalization, 1 hour	..	..	..	trG	G	GGG	P	100-125	$\geq$0
3	Solution of the centrifugalization residue in broth, 2-2.5 hours	..	..	trBG	BG	B	P	..	$\geq$0	60-80†
	Approximate p_H of the mixtures	8.3	..	5.2	4.8	4.6	4.4	?		
4	Broth control, 2-2.5 hours	..	trBG	BG	P	..	..	..	..	..
	p_H of the mixtures	8.3	5.2	4.8	?					

* See note to table 1.
† The toxin precipitates can seldom be recovered with 100 per cent of the total original toxicity of the broth filtrates from which they are prepared. The loss is due, however, to partial denaturation, and not to incomplete precipitation, as the Lf unitage is completely recovered, and the L+ and Lr unitage are more than 80 per cent recovered.

* From the Henry Baird Favill Laboratory of St. Luke's Hospital.

1. Mishulow, L., and Krumwiede, C.: A Colorimetric Reaction Between Gold Chloride and Toxins Apparently Indicative of Toxic Strength: A Preliminary Report, J. Immunol. **14**: 77 (July) 1927; Possible Colorimetric Toxin Titration, Current Comment, J. A. M. A. **89**: 887 (Sept. 10) 1927.

2. The property of producing a green color on incubation with auric chloride is not restricted to the filtrate from bacterial cultures but is exhibited by a variety of oxidizable substances. Compare von Weimarn: Kolloid Ztschr. **41**: 28, 1927.

When diphtheria toxin (the sterile filtrate of a properly prepared broth culture of toxicogenic diphtheria bacilli) is acidified to a p_H of 3.8, a flocculent precipitate forms which carries with it practically all the specific toxic and antigenic properties of the original preparation. Table 2 records the auric chloride titrations of (1) the acidified toxin broth filtrate, before separation of the precipitate by centrifugalization; (2) the supernatant solution, after removal of the precipitate, and (3) a solution of the precipitate. The three solutions were adjusted to the same volume, p_H, and buffer content before titration. It may be noted that it is not the toxin-containing precipitate but the toxin-free supernatant fluid which retains the capacity to produce a green coloration with auric chloride.

FILTRABLE TOXINS OF TUBERCLE BACILLI AND PRODUCTION OF ANTITOXIC SERUM IN SHEEP*

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During the past four years, studies of tuberculosis in patients and animals with special reference to diagnostic cutaneous reactions and allied phenomena of sensitization [1] have led me to investigate more critically a phase of experimental tuberculosis that has not received much attention in recent years. There is compelling clinical and pathologic evidence of the important part played by toxemia in the disease. Therefore, the likelihood of a filtrable toxin acting apart from the bacterial cell substance is, in reality, not a new idea. A hint in this direction had already been given by Marmorek [2] and by Denys,[3] both of whom, however, did not offer proof of the presence of a toxin. During the same period and somewhat earlier, Spengler [4] had attempted immunization of guinea-pigs with a filtrate prepared from tubercle bacillus cultures.

All these studies, concerned primarily with attempts at possible therapy, lacked the requirements to be recognized in establishing the presence of a toxic principle. Similarly, more recent studies by McJunkin [5] have suggested toxin production in the tuberculous animal, without reference to this problem. During the past year, in the course of my own investigations, a report was published by Herrold and Saelhof [6] which referred briefly to skin reactions with a filtrate obtained from a saprophytic strain (Novy strain) of tubercle bacilli. The deductions in this paper seemed to be inconsistent with the data presented and lacked numerous desirable controls. No actual neutralization experiments were described with a specific antiserum in animals or in patients, so that the claims for a toxic substance appeared to be neither warranted nor proved in any sense.

In the present investigation, the proof that a toxin and its antitoxin can be demonstrated for the tubercle bacillus rests on a series of experiments in animals and in human subjects. The conclusions are based on the methods available for identifying a toxin and testing it under varied conditions in animals as well as in clinical material. Careful clinical study of the patients has been emphasized, and the results evaluated in terms of known factors.

THE DEVELOPMENTAL CYCLE OF THERMOLABILE (TOXINS) AND THERMOSTABLE (TUBERCULIN) COMPONENTS IN BROTH CULTURES OF TUBERCLE BACILLI

In order to determine the possible development of bacillary elements or tuberculins distinct from toxins in culture mediums, experiments were made to differentiate these components. Since tuberculin elements are definitely resistant to heat, whereas the toxins are relatively thermolabile, the occurrence of these side by side could be readily shown by heating Berkefeld filtrates at inactivating temperatures. Cultures were tested in this manner after two, six, eight, twelve, sixteen, twenty-three and thirty-five days.

A virulent (Saranac H 56) and a saprophytic human strain of tubercle bacilli (obtained from Dr. F. G. Novy) were grown separately for varying periods at a temperature of from 38 to 39 C. in flasks containing from 150 to 175 cc. of glycerin hormone broth and in bouillon containing dextrose and dibasic potassium phosphate. At stated intervals the cultures were filtered through a Berkefeld (N) candle, and the filtrates were prepared just before use and divided into two portions, one of which was heated at a temperature of from 73 to 75 C. on a water bath for one hour. Injections were given intracutaneously into tuberculous and normal guinea-pigs. The dose, 0.03 cc. of a 1:2 dilution in physiologic sodium chloride solution, was injected into the skin of the shaved abdomen with a Luer syringe carrying a 27 gage short bevel needle. The animals were observed daily, and the reactions were recorded after eighteen, twenty-four, forty-eight, seventy-two and ninety-six hours or more, until the skin tests became definitely negative.

The saprophytic or avirulent strain of tubercle bacilli used in this group of experiments did not produce any toxin before the eighth day, and a heat-resistant tuberculin element could not be demonstrated until the thirty-fifth day of incubation.

These results do not apply, however, to the use of a virulent strain of tubercle bacilli, which behaves somewhat differently, producing toxic filtrates within one to two weeks and tuberculins after from four to five weeks, when these may be shown to coexist with toxin. Preliminary reports of such observations have already been published.[7]

RESULTS OF INTRACUTANEOUS INJECTIONS OF TOXIC FILTRATE IN TUBERCULOUS AND IN NORMAL GUINEA-PIGS

Separate series of four guinea-pigs were inoculated subcutaneously with 0.3 mg. of a moderately virulent strain of human tubercle bacilli twenty-nine, forty-two

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* Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints. A copy of the latter will be sent by the author on request.

1. Eberson, Frederick: Proc. Soc. Exper. Biol. & Med. **21**: 539, 1924; Am. Rev. Tuberc. **10**: 681 (Feb.) 1925; **11**: 163 (April) 1925; **12**: 49 (Sept.) 1925; Studies in Tuberculosis, Am. J. Dis. Child. **29**: 29 (Jan.) 1925; Proc. Soc. Exper. Biol. & Med. **22**: 346, 1925; Am. Rev. Tuberc. **13**: 124 (Feb.) 1926; Proc. Soc. Exper. Biol. & Med. **23**: 508, 1926; Am. Rev. Tuberc. **13**: 454 (May) 1926.
2. Marmorek, A.: Berl. klin. Wchnschr. (part 2) **40**: 1108, 1903. Med. Klin. **2**: 58, 1906.
3. Denys, F.: Le bouillon filtré, Paris and Louvain, Sixth International Congress of Tuberculosis (part 2) **1**: 749, 1905.
4. Spengler, C.: Ztschr. f. Hyg. u. Infektionskrankh. **26**: 323, 1897.
5. McJunkin, F. A.: J. Exper. Med. **33**: 751 (June) 1921; J. M. Research **42**: 201 (Jan.) 1921.
6. Herrold, R. D., and Saelhof, C. C.: Skin Reactions with Filtrate of Koch Strain of Bacillus Tuberculosis, J. A. M. A. **86**: 747 (March 13) 1926.
7. Eberson, Frederick: Proc. Soc. Exper. Biol. & Med. **24**: 329; 331 (Jan.) 1927.

and sixty-four days, respectively, before intracutaneous injection of the toxic filtrate. At the time skin tests were made, the animals had palpable inguinal lymph glands. The normal guinea-pigs were taken from the same litters as the infected animals, and weighed from 50 to 100 Gm. more than these on the date of the experiments.

The results, summarized in table 1, showed quite conclusively that normal guinea-pigs did not react to intracutaneous injections of small doses of Berkefeld filtrates containing toxin alone or in combination with tuberculin substances. With cultures from 8 to 35 days old, minute areas of blanching were observed from eighteen to twenty-four hours after the injection of unheated and heated filtrates. This was a transitory reaction unaccompanied by reddening or induration and was of no apparent significance.

In tuberculous guinea-pigs, the results were different. The unheated toxic filtrate produced, within from eighteen to twenty-four hours, definite reactions of varying severity, depending on the age of the culture. Such skin reactions were best observed with filtrates prepared from cultures between 12 and 35 days old, the most pronounced changes occurring with the strain incubated from twenty-three to thirty-five days. Deep infiltration, reddening and the development of a central purplish zone in a blanched area surrounded by an erythematous border were characteristic of tests with the older filtered cultures. In these instances, the reactions lasted at least ninety-six hours with persistent induration, even when the total area of inflammation had subsided to less than one fifth of its original extent and the previous reddening had disappeared or had been replaced by a faint blanching. In contrast to these observations, the heated material gave negative results for all tests except those made with cultures 35 days old. These filtrates produced strong reactions that were most marked after twenty-four hours, definitely reduced after forty-eight hours, and negative after seventy-two hours. Whereas the 23 day cultures did not yield a reacting substance in the heated filtrate, a transitory skin reaction was noted with the 16 day old culture. A slightly reddened area of 1 sq. cm. appeared eighteen hours after the intracutaneous injection, and after twenty-four hours showed decided pallor over a reduced area. No trace of reaction was seen after forty-eight hours. This phenomenon observed from time to time with heated filtrates is apparently a nonspecific reaction which can be brought out more definitely with filtrates that have been boiled. For this reason, added controls were made with the original culture mediums in which the organisms had been grown, and tests with this material invariably yielded negative results. Recently, in connection with studies on scarlet fever, several observers have made similar observations with boiled scarlatinal toxins and have called attention to this nonspecific reaction.[8]

Studies with Antitoxic Serum Prepared in the Sheep.—Sterile Berkefeld filtrates of broth cultures of a moderately virulent and an avirulent human strain of tubercle bacilli were injected beneath the skin of a sheep. Sixteen weekly injections were given over a period of four months with doses ranging from 2 cc. initially to 100 cc. at the last injection, for a total of 600 cc. The cultures varied in age from 8 to 27 days, and by individual trial in guinea-pigs it was found that from ten to twenty-one days' cultivation in "hormone broth" containing 2 per cent glycerin yielded the best material. A preliminary test of the serum was made two months after the beginning of the treatment, and again on the twenty-sixth day following the last injection two months later.

No attempt has been made, for the time being, to standardize the serum or to determine quantitatively its actual potency.

Toxin Neutralization Experiments.—Neutralization of the toxin filtrate was studied by means of local and systemic reactions which were elicited, respectively, by intracutaneous and intraperitoneal injections. Filtrates from two different strains of tubercle cultures incubated twenty-one days were combined separately with equal volumes of immune sheep and rabbit serum, controlled with mixtures of corresponding normal serums and filtrates diluted with physiologic sodium chloride solution. Prior to injection, all these were incubated at a temperature of 37.5 C. for one hour.

Intracutaneous Method: Having tested previously the effect of Berkefeld filtrates of tubercle cultures on normal and tuberculous guinea-pigs, it was found that only tuberculous animals would give positive skin reactions when the material was injected in minute amounts into the skin.

Such filtrates, when combined with an equal volume of serum from the immune sheep or from rabbits and incubated for one hour at body temperature prior to injection, did not give any reaction in the test animals. Serums from normal sheep, rabbits and guinea-pigs likewise combined with toxin, failed to extinguish the local skin reaction, and filtrates inactivated at a temperature of from 70 to 73 C. also gave negative reactions. Typical experiments are summarized in table 2, and indicate the presence of neutralizing substances in serums obtained from sheep and smaller animals as a result of systematic injection with toxic filtrates.

Intraperitoneal Method: To study this point further, Berkefeld filtrates diluted 1:2 with physiologic sodium chloride solution were injected in varying doses into the peritoneal cavity of tuberculous and normal guinea-pigs. From 2 to 5 cc. of the diluted toxin immediately produced violent symptoms of prostration and general illness lasting several hours in the tuberculous animals, whereas the normal ones remained symptom free following the injection of two or threefold doses. In normal mice also the intraperitoneal injection of doses ranging from 0.4 to 2 cc. was without effect.

The immediate symptoms were striking and uniform in every case. Within a minute after the injection was completed, the guinea-pig showed uneasiness and restlessness and was suddenly rooted to one spot. Breathing became rapid and labored as the animal toppled over to one side. Coincident with marked weakness of the extremities, spasmodic contraction of the diaphragm set in, and the animal exhibited movements simulating violent hiccup. Scratching reflexes of the extremities were observed frequently. There was no involuntary micturition or defecation. At the site of the injection, where the needle track permitted a small amount of filtrate to penetrate the skin, varying degrees of transitory redness and edema appeared.

Contrasted with the foregoing results are those obtained with an equivalent dose of a mixture of toxic filtrate and an equal volume of immune sheep serum incubated for one hour at 37 C. before injection into the peritoneal cavity. Under these conditions, the tuberculous guinea-pigs did not show any symptoms and

8. Toomey, J. A.; Braun, Samuel; and Halperin, Isaac: Studies in Scarlet Fever, Am. J. Dis. Child. **33**: 197 (Feb.) 1927. Fürth, J.: J. Immunol. **10**: 777 (Sept.) 1925.

behaved like the normal animals. Normal sheep or rabbit serum, however, failed to accomplish this, and the infected guinea-pigs uniformly reacted as they did following the injection of toxic filtrate alone, either diluted or undiluted with physiologic sodium chloride solution.

These experiments would appear to warrant the deduction that tubercle bacilli when grown in certain special culture mediums elaborate a filtrable toxin for which antitoxic serums can be manufactured in experimental animals. Such immune or antitoxic serum neutralizes the same or related toxic filtrates.

The results are summarized in table 3.

CLINICAL STUDY WITH BERKEFELD FILTRATES OF TUBERCLE CULTURES

During the past two years, routine intradermal tests have been made on numerous patients admitted through the University of California Chest Clinics and the tuberculosis division of the San Francisco Hospital (service of Dr. Esther Rosencrantz, University of California).

The groups of patients tested with toxin filtrates presented the widest possible range of clinical and nonclinical tuberculosis in adults and children. In addition, contact and noncontact "control" subjects supplied data that confirmed observations made in the other groups. In view of the clinical condition of the patients, and the differences in the series of reactions in the various groups, the results could be interpreted for or against the presence of specific toxin and antitoxin.

Skin Reactions with Toxin Filtrate in Adults.—Clinically Nontuberculous: There were sixty subjects in this group, including thirty-five hospital and clinic patients with diseases other than tuberculosis, and twenty-five apparently normal adults. The entire group showed the usual amount of change in the pulmonary tissues indicative of spontaneously healed tuberculous foci.

Intracutaneous tests were made with Berkefeld filtrates of cultures of virulent and saprophytic tubercle bacilli grown in the mediums previously described. Unheated and heated filtrates of cultures from 7 to 25 days old were diluted 1:10 and 1:20 with physiologic sodium chloride solution and compared with mixtures of equal volumes of immune sheep serum and double strength toxin filtrate. Tests were made also with diluted immune serum alone and with uninoculated culture mediums. All the materials were incubated for one hour at body temperature, and 0.1 cc. was injected into the skin.

Reactions were classed as positive when definite induration and reddening were present. The area of such reactions, which appeared after twenty-four hours and were maximal after forty-eight hours, varied from 3 to 40 sq. cm. and lasted from four to fourteen days in most cases, leaving a residual pigmentation. The characteristically positive test showed an indurated, reddened area surrounded by varying degrees of erythema and infiltration, progressively diminishing toward the periphery (fig. 4). Constitutional disturbances, such as slight elevation of temperature and malaise, were noted in about 10 per cent of the subjects. Filtrates that had been heated for one hour at a temperature of from 70 to 73 C. gave slight reactions in all but a few cases. These reactions were characterized by reddening without infiltration, and faded after from two to four days.

Neutralization Experiments: Immune sheep serum combined with toxin filtrates gave profound transitory reactions appearing within an hour or two after injection and fading completely after twenty-four hours. These areas showed a deeply indurated and elevated white center measuring from 1 to 3 sq. cm., surrounded by a wide zone of erythema and peripheral mottling. At a time when the toxin filtrates were beginning to cause a reaction, the neutralized toxin filtrate had already become negative and remained so. Immune serum alone caused faint to moderate reddening that appeared within from three to four hours and did not give any further reactions. Uniformly negative results were observed also with uninoculated broth mediums.

The experiments with this group of patients bear out the well known fact that adults cannot be said to be normally free, in a broad sense, from tuberculosis. The reactions that occurred with toxin filtrate in such persons were a measure, therefore, of individual resistance in terms of an arrested or obscure healed focus of tuberculous infection somewhere in the body.

TABLE 4.—*Summary of Results in Clinically Nontuberculous Adults*

Area of Skin Reaction, Sq. Cm. After 48 Hours	Number of Patients Reacting With				
	Toxin Filtrate (1:20)	Toxin Filtrate Plus Immune Sheep Serum	Immune Sheep Serum	Heated Toxin Filtrate (1:20)	Uninoculated Broth Mediums
3 to 10	2	0	0	55	0
10 to 20	19	0	0	3	0
20 to 30	24	0	0	2	0
30 to 40	15	0	0	0	0

Advanced Tuberculosis: One hundred and eighty patients with clinically far advanced tuberculosis were given intracutaneous injections of 0.1 cc. of diluted toxin filtrate unheated and heated, and mixtures of immune sheep serum combined with toxin filtrate. This group included ninety-six patients who had serious complications, were failing progressively and offered a bad prognosis,[9] and eighty-four who had been showing definite clinical and subjective evidence of improvement over a long period. The criteria used for such deductions were numerous, and were carefully evalulated by frequent study and examination of each patient.

The results showed quite conclusively that skin reactions with toxin filtrate were definitely correlated with the presence or absence of clinical improvement. In the group without improvement, few patients reacted after twenty-four hours, with small areas of reddening usually free from induration. After forty-eight hours, the local reaction faded entirely or appeared negligible. As a whole, this group gave entirely negative tests. However, patients showing clinical improvement gave reactions after twenty-four and forty-eight hours with varying degrees of severity and persisting for from four to seven days, depending on the toxin filtrate used. The areas of redness and induration ranged from 20 to 60 sq. cm. The type of reaction was recorded in terms of induration, reddening and duration of local changes. The observations shown graphically in figures 1, 2 and 3, in which the area and the type of reaction are combined, illustrate the spontaneous grouping of cases according to the clinical condition and the observed reactions. These results for toxin filtrate produced by an avirulent and virulent strain of human tubercle bacillus are summarized in tables 5, 6 and 7.

9. At this writing, thirty-six patients of this group have died.

The difference noted between reactions with heated as compared with unheated toxin filtrate was decisive. Out of a group of 110 patients tested with filtrate from an avirulent tuberculosis strain, eighty-eight, or 80 per cent, showed more intense reactions with the unheated toxin filtrate. Similarly, another group of fifty-one patients, tested with filtrate from a virulent strain of tubercle bacilli, reacted more intensely in forty-three instances, or 86 per cent. The variation, when in favor of the heated toxin filtrate, was in the direction of extent or area rather than of infiltration, degree of redness and duration of the local changes. With these criteria, the unheated toxin filtrate always took precedence, and was correlated in most cases with evidence of clinical improvement.

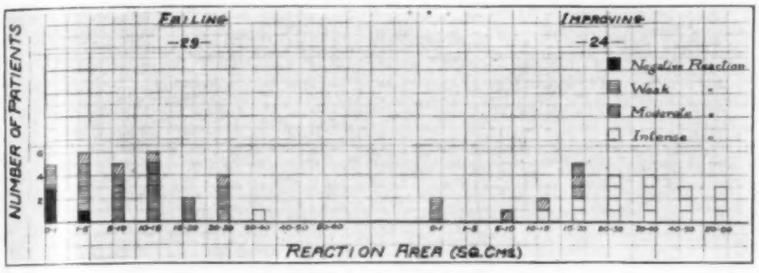

Fig. 1.—Results of inoculation of toxin filtrate of a virulent strain of tuberculosis (26 day culture) in advanced tuberculosis.

In all the patients tested, immune serum combined with toxin filtrate prevented the occurrence of skin reactions that were produced by toxin filtrate alone. Apart from a transitory change already noted, these mixtures resulted negatively. In a "control" group, immune sheep serum alone and uninoculated broth mediums did not give any reactions.

The results observed in the group of patients with advanced tuberculosis gave further evidence that skin reactions with toxin filtrate were correlated with the amount of bodily resistance to the specific infection. Allergic response was absent in patients exhibiting profound toxemia and progressively hopeless decline in their clinical condition. However, when clinical improvement was evident despite extensive pathologic changes, such patients reacted in varying degrees by positive skin tests. These results were consonant with the previously reported observation that the blood serum of patients with advanced tuberculosis contained a skin-reacting substance in amounts directly proportionate to the extent of toxemia and inversely to the antibody content.[10]

SKIN REACTIONS WITH TOXIN FILTRATES IN CHILDREN

Criteria of "normality" in adults are dubious when tuberculosis is called into question. Experience has shown that few adults have escaped exposure and more or less infection in consequence. Clinical and pathologic evidence has made this axiomatic and not requiring further comment.

The need for a group of normal controls was met by abundant clinical material made accessible through a study of juvenile tuberculosis now in progress. The various factors involved in diagnosing tuberculosis in children could be checked accurately in patients who had been followed intensively for from two to four years.

In this series intracutaneous tests were made with tuberculin fractions, including the ether-soluble fraction, in 378 patients, and in sixty patients with toxin filtrate and with ether-soluble tuberculin fraction. The last group received 0.1 cc. of toxin filtrate (diluted 1:20) and ether-soluble tuberculin fraction (diluted 1:50 and equivalent to 0.1 mg. of tuberculin). Control tests were made with 0.1 cc. of uninoculated broth mediums.

Skin reactions were considered positive when the site of injection showed for from twenty-four to forty-eight hours an area of definite induration and reddening at least 0.5 by 0.5 cm., with or without a peripheral zone of erythema. In general, the reactions averaged from 1 by 1 to 1.5 cm. of reddening and induration, with surrounding erythematous zones ranging from 1.5 by 1.5 to 2 by 4 cm. These local changes were still present in a majority of the cases after from seventy-two to ninety-six hours.

The results showed that contact and noncontact subjects reacted differently to the toxin filtrate. Whereas the filtrates gave positive tests in all contacts, a positive reaction was not observed in any of the noncontact patients. The entire group gave negative tests with ether-soluble tuberculin fractions and with uninoculated broth mediums (control).

As in the preceding experiments, these confirmed the occurrence of mild allergic skin reactions in patients having clinical and roentgen-ray evidence of a healed tuberculous infection. When active tuberculosis existed, the intensity of the reaction varied with the extent of the infection and the clinical symptoms. Positive skin tests with toxin filtrate were found to measure antibody response. Nontuberculous subjects failed to react.

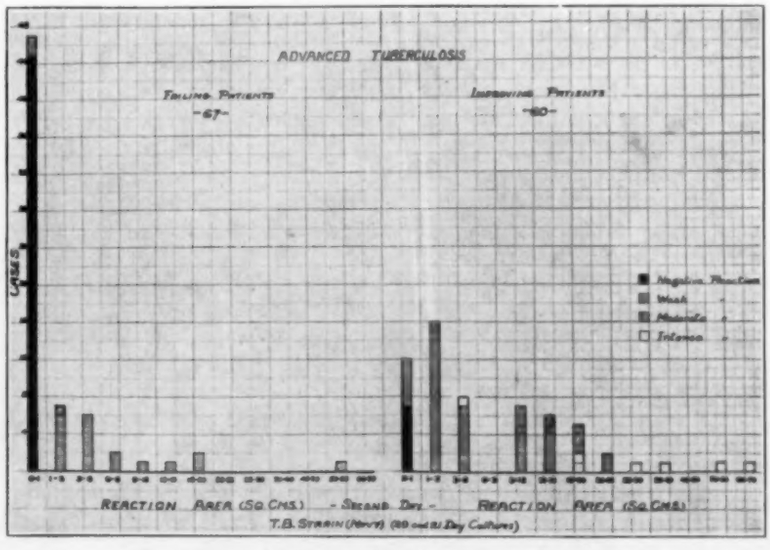

Fig. 2.—Reaction to toxin filtrate in advanced tuberculosis.

These results were in agreement with what might have been expected when a toxin filtrate was introduced into the skin. Furthermore, these reactions were

10. Eberson, Frederick: Proc. Soc. Exper. Biol. & Med. **24**: 79 (Oct.) 1926; Studies in Tuberculosis, J. A. M. A. **88**: 313 (Jan. 29) 1927; Am. Rev. Tuberc. **15**: 127 (Jan.) 1927.

apparently not referable to a bacillary element, such as the fatty substance which is soluble in ether and acetone. With this fraction, uniformly negative results occurred. The toxin filtrate would appear to be distinct, therefore, from bacillary disintegration products.

COMMENT

In commenting on the experiments described in this paper, it would be well first to outline the problem for solution and then to consider the means at hand to be used for this purpose.

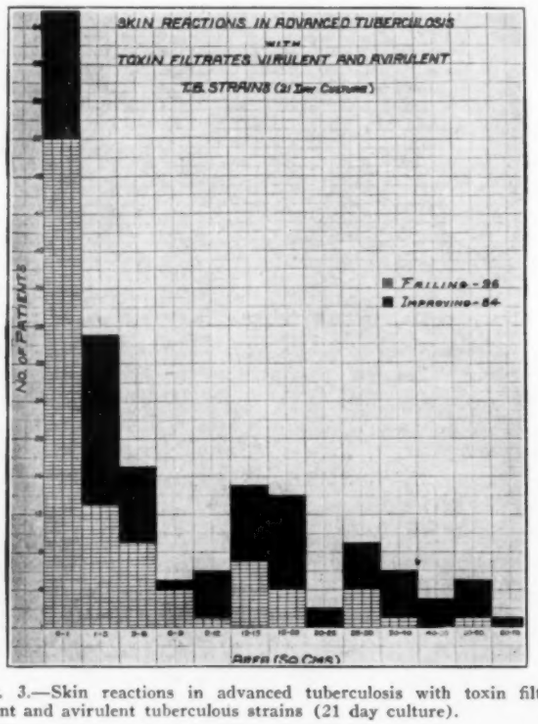

Fig. 3.—Skin reactions in advanced tuberculosis with toxin filtrates virulent and avirulent tuberculous strains (21 day culture).

There has been no convincing observation either in man or in experimental animals to show that the tubercle bacillus elaborates a toxin. The clinical picture of intense toxemia seen in the disease and the remarkably localized foci of infection have been explained chiefly on anatomic grounds. The basis for these deductions has been the alteration of conditions influencing the walling-off or extension of the tubercle. When the relatively avascular tubercle underwent modification, and permitted circulatory exchange between its inner and outer confines, something was supposedly given off from the structure causing the well known symptoms. The possible specific nature of the symptoms has not been mentioned, and although endotoxins or tuberculin-like bacillary substances have been called into question, consideration has not been given to toxins in the strict sense. It has been assumed for many years that the ordinary serologic antibodies encountered in tuberculosis do not have any bearing on resistance to the disease.

Although the cutaneous and systemic phenomena have been conveniently described in general terms of altered tissue reactivity, clear-cut evidence on the nature of the reacting substance has been lacking. The formation of tubercle, analogous to the response to any mechanical irritant, does not seem to explain adequately the various skin reactions or the toxemic symptoms observed in different stages of the disease.

In considering the problem of resistance to tuberculosis, attention has been given in the past to the changed reactivity or allergy in man and animals following a first infection with tubercle bacilli. Krause [11] and others [12] have presented evidence of increased capacity of the tissues to react to a second infection with tuberculosis. There is nothing inconsistent with these and similar observations in the results of the present investigation.

The accepted facts regarding toxin-antitoxin phenomena appear to have been demonstrated. They would explain adequately the absence of skin reactions under certain conditions, and the different types of positive reactions as they occur in patients and animals. The various phenomena have been evoked by local and systemic responses, and these have been prevented by specific immune serum.

The methods available for attacking the problem of toxin production by the tubercle bacillus required, first, a study of the cutaneous reactions with bacillary products. Previous clinical and laboratory studies on the behavior of specially prepared tuberculins [1] showed that sensitization could be accomplished with these in nontuberculous animals. Such animals responded in the same manner as infected ones to the reintroduction of tuberculin or tubercle bacilli. The deduction from these experiments was that the reactivity of the body could be changed without a previous tuberculous focus. Pursuing this idea further, the differentiation of tuberculin substances from other reacting elements was next attempted. These studies led ultimately to the identification in broth cultures of a toxic filtrate that was not related, apparently, to tuberculin elements or to products hitherto described.[7]

In evaluating the results of the present investigation, attention has been directed particularly to the nature of the clinical material in an attempt to check the animal experiments. The observations, it is believed, have given evidence that a filter-passing toxic substance, unlike tuberculin, is produced by the tubercle bacillus.

Fig. 4.—Intracutaneous reaction with toxin filtrate, 21 day culture tuberculosis strain (Novy), seventy-two hours after test was made. The area is 2 by 2 cm., showing deep infiltration and reddening, with an erythematous border, totaling 4 by 5 cm. At the thirty-sixth hour, the reaction area measured 3.5 by 4 cm. with an erythematous border totaling 5 by 7 cm. The subject was an adult without clinical signs or symptoms, and showed spontaneously healed tuberculous foci in the lungs.

The occurrence of negative skin tests in persons who had not been exposed to tuberculosis, and in those having far advanced disease without improvement, suggests the absence of an allergic response to a specific element. Since the majority of apparently normal adults without

11. Krause, A. K.: Am. Rev. Tuberc. **1**: 65 (April) 1917.
12. Baldwin, E. R., and Gardner, L. U.: Am. Rev. Tuberc. **5**: 429 (Aug.) 1921.

clinical tuberculosis but with healed foci of infection give positive skin reactions, there is additional evidence here of a specific response in terms of resistance or immunity. With profound toxemia and no antitoxin, reactions do not occur with toxin filtrate. Similarly, in children without tuberculous foci and, therefore, no allergy, tests are likewise negative. The intracutaneous test, therefore, would seem to indicate the presence or absence of antibodies for the toxin. This is shown decisively in the groups of patients with far advanced tuberculosis in whom different degrees of reactivity are correlated with the clinical condition. In the blood

TABLE 8.—*Results of Toxin Filtrate Inoculation in Contact and Noncontact Subjects*

		Skin Reaction		
Group of Patients	Number	Toxin Filtrate (Dilution 1:20)	Ether-Soluble Tuberculin Fraction (1:50)	Uninoculated Broth Mediums (Dilution 1:10) (Control)
Contact children.....	378	.....	Negative	Negative
	40	Positive	Negative	Negative
Noncontact children....	20	Negative	Negative	Negative

serum of such patients, moreover, the presence of a skin reacting substance was found to correspond with the degree of toxemia.[19] It follows that a reaction due to tuberculotoxin can be distinguished from that of tuberculoprotein; further, an allergic state can be differentiated from one of immunity or resistance.

The clinical results are in agreement with experimental studies made in tuberculous and normal guinea-pigs. The analogy is striking. In the tuberculous animal, reinoculation with organisms into the skin gives a rapid inflammatory reaction, whereas this does not occur in the normal animal. Systemic reinoculation in the former instance is accompanied by profound toxemia and often death. The introduction of toxin filtrate into the skin or into the peritoneal cavity of tuberculous animals is accompanied by the same types of reaction. To prevent the occurrence of such phenomena, it suffices merely to add toxin filtrate-immune sheep serum to the filtrate.

I would suggest the diagnostic and prophylactic applications of these observations to the study of tuberculosis in children and adults. Such investigations of my own are now in progress, and will make the subject of another report.

SUMMARY AND CONCLUSIONS

A filtrable toxin produced by the tubercle bacillus gave rise to definite skin reactions in tuberculous patients and guinea-pigs. Intraperitoneal injection of small amounts of this toxin filtrate in tuberculous guinea-pigs caused typical toxic symptoms. The toxin can be inactivated by heating at a temperature of from 70 to 73 C. for one hour.

Immune or antitoxic sheep serum was produced by repeated injections of filtrable toxin element of the tubercle bacillus. Such serum neutralized the demonstrable skin reaction caused by the toxin, whereas normal serum from the sheep or rabbit failed to accomplish this result. Similarly, the reactions following intraperitoneal injections of toxin filtrate in the tuberculous animal could be prevented by immune but not by normal serum.

In adult patients with advanced tuberculosis and no clinical improvement, skin tests with toxin filtrate were negative or transitory, whereas patients in such a group who were definitely improving gave positive reactions. In these, immune serum combined with toxin filtrate prevented the occurrence of a positive skin test.

Adults who were clinically nontuberculous but who showed the usual amount of spontaneously healed tuberculous foci uniformly gave intensely positive skin reactions with diluted toxin filtrate. These reactions did not occur when immune sheep serum had been combined previously with several volume doses of toxin filtrate and incubated before injection. Here, also, normal serum was without effect.

In children who had been exposed to tuberculosis and who evidenced healed, arrested or active foci of tuberculosis, skin tests with diluted toxin filtrate were uniformly positive. These reactions varied with the extent and acuteness of the disease. In this group, negative results were obtained with intracutaneous injections of ether-soluble tuberculin derivatives. Thus was excluded the possibility of a reaction due to bacillary elements of which the chief offenders might be the ether-soluble and acetone-soluble fatty derivatives. The toxin filtrate, therefore, is not related to any bacillary disintegration substance. Children who had not been in contact with tuberculosis, and who did show any demonstrable clinical or laboratory evidence of tuberculous infection, gave negative skin tests with toxin filtrate.

The skin tests made on adults, children and experimental animals suggest, furthermore, that toxin filtrate offers a method for detecting existing tuberculous infection that is clinically significant, particularly in children. In this connection, ordinary tuberculin tests have not proved valuable.

The toxin filtrate of tubercle bacilli measures antitoxin content or susceptibility to tuberculous infection. A negative intracutaneous test with toxin filtrate indicates either the absence of tuberculous foci and hence no resistance, or an advanced infection with profound toxemia and the amount of antibody entirely absent or too small for detection. In advanced tuberculosis, the reactions appeared to be correlated with the clinical condition of the patient and the prognosis in each case. From these observations, the further deduction may be made that reactions of tuberculotoxin can be distinguished from those due to tuberculoprotein. As a corollary, it follows that an allergic state can be differentiated from one of immunity or resistance.

From these results and the studies previously noted, it may be concluded that the requirements for the demonstration of toxin production by tubercle bacilli have been fulfilled.

TABLE 9.—*Summary of Results*

		Skin Reactions		
Group of Patients	Number	Toxin Filtrate (Dilution 1:20)	Toxin Filtrate (Dilution 1:5) Plus Equal Volume of Immune Sheep Serum	Ether-Soluble Tuberculin Fraction (Dilution 1:50)
Tuberculosis, advanced.....	180			
With clinical improvement.	84	Positive	Negative*	
Failing, with bad prognosis	96	Negative	Negative*	
Clinically nontuberculous adults with spontaneously healed foci.....	60	Positive	Negative	
Contact children.....	378	.....	.....	Negative
	40	Positive	Negative	Negative
Noncontact children.....	20	Negative	Negative	Negative

* Sixteen patients were tested; thirteen showed improvement—toxin filtrate positive; and three were failing, with bad prognosis—toxin filtrate negative.

Further studies are now in progress on methods of standardizing immune serum against toxin filtrates of different potency. Active immunization experiments have been begun with toxin filtrates in animals and in children.

ABSTRACT OF DISCUSSION

DR. HARRY J. CORPER, Denver: This report by Dr. Eberson is part of a large problem that he has been working on for some time, and although I must confess a personal prejudice against this phase of it, I know it will be understood that this prejudice is caused by unfavorable experiences with other antitoxic and immune serums enthusiastically advocated in tuberculosis. It appears to one who has kept in touch with Dr. Eberson's progress that he has gone about his work scientifically and has taken advantage of our modern advances in technic to avoid certain obvious pitfalls. Dr. Eberson's valuable contributions with purer and uncontaminated tuberculin fractions made by growing bacilli on a nonprotein synthetic medium (Gessard and Vaudremer) rank clinically with the experimental preparation of crystalline tuberculin by Long and Siebert. There is every reason to accept Dr. Eberson's observations without criticism since they appear well controlled, yet my skepticism leads me to hope that instead of using the glycerol hormone medium of Huntoon, complicated obviously by unknown factors and materials, he may be able to prepare the toxic heat labile filtrate on some simpler nonprotein medium such as Long's or that of Gessard and Vaudremer. The interesting part of this study is the fact that Dr. Eberson has found, in addition to the ordinary heat stable tuberculin which he efficiently tested clinically as ether insoluble X, a heat labile toxic substance that presents antitoxic possibilities for combating certain toxic effects in tuberculosis, drawing a certain analogy with the recent advances in scarlet fever by the Dicks. I might also mention certain attempts to produce caseo-antitoxins without avail, even though many of us have felt that the major toxic effect in tuberculosis came rather from distintegrated tissue products than from products of the bacilli themselves as demonstrated by Dr. Eberson.

DR. J. M. ANDERSON, Columbus, Ga.: I know full well that whenever any man departs radically from the beaten path he is considered either a biologic sport or crazy. When I give an absolutely new slant on the subject of tuberculosis I know full well the risk I run. However, here goes. Tuberculosis is one of the ordinary diseases of children. Practically all children have it. It is never diagnosed. There is no sputum available for the microscope, and it gets well before it ever reaches the stage at which the symptoms by which we diagnose the disease develop. As they get well, permanent immunity is produced, as in measles, mumps, whooping cough, and so forth. This explains why adults, as a rule, do not have tuberculosis; they have already had it. It also explains why autopsies prove that every one sometimes is slightly tuberculous. Occasionally, an individual escapes in childhood but develops the disease later and then it is a great deal more serious affair. Such persons usually succumb. If they do not succumb, they are permanently disabled and continue through life to have exacerbations, which Bushnell says is nature's way of revaccinating against the disease. How does nature go about doing these things which have been so baffling to the minds of men? Let us see what it is that a child does and an adult does not do, what an adult does and a child does not do. A child does not know how to expectorate. He automatically and unconsciously swallows everything that comes up out of the lungs just as he bats his eye to remove the dust. The tubercle bacilli come out of their natural habitat and go into nature's marvelous chemical laboratory, the digestive system. Nature produces and injects a tuberculin that both cures and immunizes. The tubercle bacillus has flaunted itself in the face of the human race throughout the ages. We have learned its mysterious and elusive conduct. We know why adults do not get well; we know that they can get well by permitting a little child to lead them. Gentlemen, I am curing tuberculosis. I am also stopping its spread, and I am still at liberty.

DR. FREDERICK EBERSON, San Francisco: With reference to Dr. Corper's suggestion regarding hormone mediums, it is obvious that all mediums tested for so-called toxins must be controlled by tests made with the element on which the organisms have been grown. There never has been a positive test with the hormone mediums or with any other medium on which these tubercle bacilli have been cultivated. Furthermore, taking by and large all the clinical studies, we have made further controls by virtue of the fact that in the different clinical conditions there are different ratios, let us say, of toxin and antitoxin circulating. These tests are perfectly correlated with the clinical picture in support of the facts presented. It is essential in all experimental work to remember that the animal body is not like the patient, and for that reason we have made a very thorough and careful study of the clinical material. With regard to the toxic reactions being based on caseous material, this has been a hypothesis but we have been interested to know what causes the caseation and breakdown of the anatomic tubercle. There does not seem to be any doubt but that we have always minimized the importance of a toxin as a basis for this picture. From the standpoint of the further development of the subject, there is every reason to believe that the ultimate cure, if we will, of the disease will be based not on an antitoxin alone but probably on a combination of antibacterial and antitoxin substance. That, however, is for the future to decide. I do not know how to answer Dr. Anderson's discussion. It was most interesting. I think that we must always evaluate our experimental results. If the observations are controverted, we shall be glad to have some one show us where the mistakes are.

THE FORMATION OF VESICAL CALCULI*

BENJAMIN H. HAGER, M.D.
AND
THOMAS B. MAGATH, M.D.
ROCHESTER, MINN.

Stones are formed within the urinary tract under a variety of conditions, and no single mechanism suffices to explain the process. It is difficult to distinguish the actual cause from the predisposing factors, and impossible to distinguish it from those factors which may be regarded as secondary.

Cystine and uric acid stones cannot be explained on any other basis than faulty metabolism. The experimental production of oxamide calculi by feeding large quantities of oxalate can probably be explained on a physiochemical basis. That a foreign body, regardless of its structure or composition, acts as a nucleus for the deposition of urinary salts is well established, so that the part played by mechanical factors and obstruction cannot be ignored. It is apparent that the chemical substances which go to make up urinary calculi vary under different conditions, and are dependent in part on the etiologic factor.

During the last decade, bacteria as an essential cause of lithiasis have received considerable attention. That some types of bacteria may assume special function has been proved experimentally. In the etiology of urinary lithiasis, bacteria of an endogenous nature, therefore, must be included with the chemical and mechanical factors. For convenience, we have designated as endogenous those bacteria which originate in foci in the body and are concerned with the formation of stone.

* From the Section on Urology and the Section on Clinical Pathology, Mayo Clinic.
* Read before the Section on Urology at the Seventy-Eighth Annual Session of the American Medical Association, Washington, D. C., May 20, 1927.

We have suggested the term exogenous for another group which gains entrance to the urinary tract by direct implantation, and is also concerned with the formation of calculi. It is the importance of the latter group which will be emphasized in this paper.

In a recent publication,[1] four cases of vesical lithiasis were reported in which a specific bacterium had been isolated. Since then five other cases have been studied,

Fig. 1 (case 1).—Shadow in the region of the bladder.

and mention is made of them here as a preface to the result of an experimental study. Five cases of lithiasis in various parts of the urinary tract, in which *Proteus ammoniae* has been isolated, are briefly reviewed:

REPORT OF CASES

CASE 1.—A boy, aged 15, complained chiefly of pain and difficulty in urination. The history was irrelevant except for two operations. The appendix had been removed three years before examination at the Mayo Clinic, because of pain in the right hip which had troubled him for two weeks and had become so severe that he could not walk. The symptoms disappeared after appendectomy. Two years later, an enchondroma in the region of the right groin was removed, and lavage of the bladder was carried out for a week. The patient said that there had been swelling and that he limped for about three or four months before the operation. From one to two months after the operation, he began to experience a burning sensation on urination, a small lump appeared on the lower side of the penis, and some pain was complained of. Beginning in July, 1925, what looked like pus was voided, and frequency (from six to seven times daily) and nocturia appeared. The symptoms were progressive, but the patient did not mention them until January, 1926, when they had become so severe that he was no longer able to hide them. Since that time he had remained in bed.

The patient weighed 99 pounds (45 Kg.). The systolic blood pressure was 120 and the diastolic 102. The tonsils were enlarged (graded 3). There was a purulent and bloody urethral discharge and marked tenderness over the penile urethra, the posterior half of which was nodular and indurated. The specific gravity of the urine was 1.015; it was alkaline and contained red blood cells (graded 2) and an occasional pus cell; the phenolsulphonphthalein return was 50 per cent. The blood urea was 22 mg. for each hundred cubic centimeters. The hemoglobin was 72 per cent; the erythrocytes numbered 4,240,000, and the leukocytes, 9,200. A roentgenogram of the kidneys, ureters and bladder revealed only a large stone in the bladder (fig. 1).

Vesical lithiasis was diagnosed, and suprapubic cystostomy was performed. A stone measuring 2.5 by 2 cm. was removed (fig. 2). Foul cystitis made it seem advisable to maintain suprapubic drainage for some time. Qualitative analysis of the stone showed that it was composed of phosphates and carbonates.

Culture of the urine from the bladder, as well as that passed by the urethra, showed the presence of *Proteus ammoniae*. The disease was then recognized as an infection with *Proteus ammoniae*, and treatment was instituted to rid the bladder and urethra of it.

Following suprapubic cystostomy, practically all the urine drained through the stoma, only a little passing through the urethra because of marked burning and pain. The incrustations in the posterior portion of the urethra remained, in spite of daily irrigations of the bladder and urethra.

Some time later, under general anesthesia, urethrostomy was performed at the angle of the penis and scrotum and, by means of a gallbladder scoop, four large pieces of incrusted material were removed from the posterior urethra. The incrustations anterior to the point of incision were also removed by curettement. A sound was then passed through the bladder without difficulty. The incision was closed, and a soft rubber catheter inserted through the urethra into the bladder. Following this the patient made a satisfactory recovery, and recurrence of symptoms did not take place during the remainder of his stay.

CASE 2.—A man, aged 46, had had a duodenal ulcer excised and an appendectomy performed in 1912, and an operation had been performed at the Mayo Clinic in 1924 for multiple perforating duodenal ulcers. In 1925 he returned, and stone in the bladder was diagnosed. Two years previously "sand" had been voided, and there had been a severe attack of pain in the left side radiating down to the left groin. The pain lasted for five days. In July, 1925, four months prior to admission, the patient complained of pain in the bladder with frequent urination. Then urination ceased and catheterization was required. A few days later a similar attack demanded catheterization. During the previous two months frequency of urination, together with difficulty in its initiation, had been a more or less constant symptom. In the roentgenogram of the kidneys, ureters and bladder there was a suspicious shadow over the bladder with multiple shadows over the prostate. The cystoscopic examination at this time showed definite relaxation of the internal sphincter. There was a single stone measuring 2 by 2 cm. This was crushed and removed. Prostatitis was diagnosed and treatment instituted. The patient was dismissed, Nov. 14, 1925. He began to suffer from perineal pain one week later, and returned, April 5, 1926. Some small stones had been voided. A week before admission, a stone in the bladder was revealed by a roentgenogram made at home. On cystoscopic examination a stone was seen protruding from the diverticulum in the prostatic urethra; it was apparently about 1 cm. in diameter (fig. 3). The stone was broken into two pieces with the beak of the cystoscope and removed. A second roentgenogram several days later showed multiple stones in the prostatic urethra.

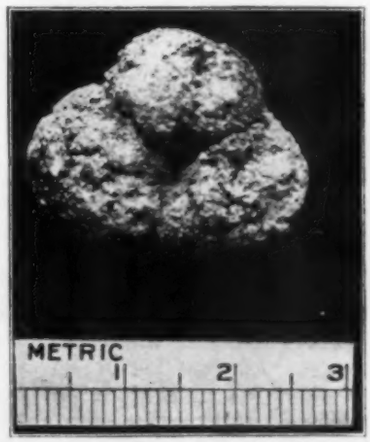

Fig. 2 (case 1).—Stone removed from the bladder.

1. Hager, B. H., and Magath, T. B.: Four Cases of Urinary Calculi from Which Proteus Ammoniae was Isolated, M. Clin. N. Amer. **10**: 693-702 (Nov.) 1926.

The patient again returned, July 27, 1926, stating that he had had considerable pain in the joints and body following an attack of influenza about three months previously; his chief complaint at this time was pain in the region of the bladder. In the roentgenogram there was a shadow on the left side in the region of the kidney. Cystoscopic examination showed that this was cast by a stone, 2 by 1 cm., in the left

Fig. 3 (case 2).—Stone in posterior portion of the urethra.

kidney. The posterior portion of the urethra was markedly cicatrized with dilated ducts and multiple small stones. The hydrogen ion concentration of the urine was 7.8. Because of the repeated formation of stones in the prostate and posterior urethral diverticulum, prostatectomy was advised. At operation it was noted that there was not any intravesical enlargement of the gland, which was entirely intra-urethral and of the prostatitis type with multiple stones, the largest being about 3 mm. in diameter. The pathologic examination showed adenofibromatous hypertrophy with chronic prostatitis and multiple prostatic stones. Following prostatectomy, the patient recovered uneventfully, except for some dysuria and the passage of calcareous tissue and gritty material. Numerous cultures were made from the calcareous material, and *Proteus ammoniae* was isolated. A roentgenogram, Sept. 20, 1926, did not show evidence of shadow in the prostatic or vesical areas. The single shadow, 2 by 1 cm., in the left renal area persisted.

CASE 3.—A man, aged 68, was admitted, March 10, 1927, complaining of inability to empty the bladder. About twenty-six months previously he had first noticed frequency, urgency and inability to initiate micturition. Two months later he commenced the use of a urethral catheter every seven hours; following this there was some pain referred to the testis and penis, and a small stone was voided. The patient collected nine of these, although he stated that he might have missed some. Blood and mucus had recently been observed in the urine.

Rectal examination showed enlargement of the prostate (graded 2). The specific gravity of the urine was 1.017; it was alkaline and contained albumin (graded 3), red blood cells (graded 2) and pus (graded 2). The combined intravenous test with phenolsulphonphthalein gave a return of 25 per cent. A culture of the urine from the bladder showed the presence of *Proteus ammoniae*. The blood urea was 68 mg. for each hundred cubic centimeters. A roentgenogram of the kidneys, ureters and bladder showed scoliosis and hypertrophic arthritis of the lumbar spine and three shadows over the bladder, probably cast by stones in the bladder (fig. 4).

March 20, three vesical calculi were removed after suprapubic cystostomy; two of these measured 1.5 cm. and 2 cm., respectively, in diameter. One month later, prostatectomy was performed.

CASE 4.—A man, aged 66, had complained chiefly of frequency of micturition with a burning sensation for three or four months. He had been crippled when an infant. He had had typhoid, diphtheria, pneumonia and influenza in 1924, and malaria several times. Two-stage prostatectomy had been performed in October, 1925. About six weeks later frequency began, micturition occurring perhaps every fifteen minutes, but the amount passed at one time never exceeded 120 cc. and sometimes only 60 cc. Micturition was accompanied by a moderate burning sensation. Nocturia was progressive until, at the time of examination, micturition occurred four or five times a night, and a total of scarcely more than 250 cc. was passed. The urine then had an offensive odor.

The patient appeared senile and emaciated; the left leg was atrophied. Much pyorrhea and numerous carious roots were noted. There was considerable arteriosclerosis of the peripheral vessels but no cardiac enlargement. The prostate showed multiple hard indurated areas in the prostatic capsule, particularly on the left side. The urine was alkaline and contained pus (15 cells to a field), and the combined test of function showed a return of 50 per cent. A roentgenogram showed multiple laminated shadows over the area of the bladder (fig. 5). *Proteus ammoniae* was isolated in pure culture from the urine.

Under sacral anesthesia, cystoscopic examination was carried out and litholapaxy performed. There was some residual prostatic tissue in the neck of the bladder, together with diffuse inflammation and multiple large cellules in base and posterior wall. Two of the stones were found in pockets in the prostatic capsule. These were pushed back into the bladder and crushed. Following litholapaxy, fragments were removed, but there were multiple firm incrustations in the prostatic capsule and base. An examination of the calcareous material showed it to be made up of phosphates and carbonates.

Fig. 4 (case 3).—Multiple shadows in area of the bladder.

CASE 5.—A man, aged 73, was admitted to the Mayo Clinic, Nov. 8, 1926. Fourteen years before, questionable venereal disease had been present. There was not any discharge but the patient was unable to urinate and used a catheter intermittently for two years. Stones had been removed from the bladder twelve years before, two years before, and one year

before admission. A punch operation had been performed on the prostate with the last two operations. Neither catheterization nor cystoscopy had been undertaken during the last year.

Two days after registration, the patient was admitted to the hospital with impending uremia secondary to renal insufficiency as a result of renal and vesical calculi. Blood urea

Fig. 5 (case 4).—Multiple laminated shadows in area of the bladder.

on admission was 120 mg. for each hundred cubic centimeters. A roentgenogram of the kidneys, ureters and bladder showed multiple stones in the left kidney, and indefinite shadows over the area of the bladder (fig. 6). The specific gravity of the urine was 1.017, and the reaction alkaline; it contained albumin (graded 4), red blood cells (graded 4) and an occasional pus cell. There was progressive increase in the blood urea content without response to any form of medication. *Proteus ammoniae* was isolated from the urine on culture, and apparently was the etiologic factor in this persistent and continuous formation of stone in the urinary tract.

The patient died twelve days after admission from terminal pneumonia and uremia. Cultures of small calculi removed from the left kidney at necropsy showed a growth of *Proteus ammoniae*.

COMMENT

In our first experiments with *Proteus ammoniae* we were able to produce incrusted cystitis in a high percentage of rabbits and guinea-pigs by the following method:[2] The urinary bladder was catheterized, and into it was introduced 0.5 cc. of a 0.1 per cent alcoholic solution of salicylic acid. This was found to produce marked excoriation of the mucosa, which on some occasions went on to ulceration, involving the deeper layers in from three days to a week. After this injection, 1 cc. of a twenty-four hour broth culture of *Proteus ammoniae* was instilled through a catheter. In a large percentage of cases, the bacilli injected by this method produced a severe grade of incrusted cystitis which lasted for an indefinite time, the urine becoming markedly alkaline owing to the presence of free ammonia. The bladder in control animals healed following the injection of salicylic acid in from ten days to two weeks if bacteria were not injected. The following explanation was offered at that time: *Proteus ammoniae*, being able to convert urea rapidly into ammonia, precipitated the alkaline earthy salts in the urine, forming chiefly the carbonates and phosphates of calcium and magnesium; these precipitates became attached to the abraided mucous surface. It was noted at the time of the experiments that there was a tendency for these precipitates to break off and form free calculi in the bladder. Indeed, one stone found in the bladder was as large as 12 by 7 mm.

In the present study, an attempt was made to produce free calculi in the bladder by a similar method. Difficulty was experienced in injuring the bladder sufficiently to cause the precipitation of the alkaline salts without killing the animals. Again, while incrusted cystitis was produced in a certain number of animals, free stones were produced, as might be expected, in but few animals. In four rabbits in which the experiments were carried to an end in from three to five weeks, and in two guinea-pigs it was possible to produce stones of fair size, one 10 mm. in diameter, which were free in the lumen of the bladder. *Proteus ammoniae* was isolated in pure culture from the bladders of these animals. In control animals in which *Bacillus coli* was instilled, neither incrusted lesions nor stones were ever

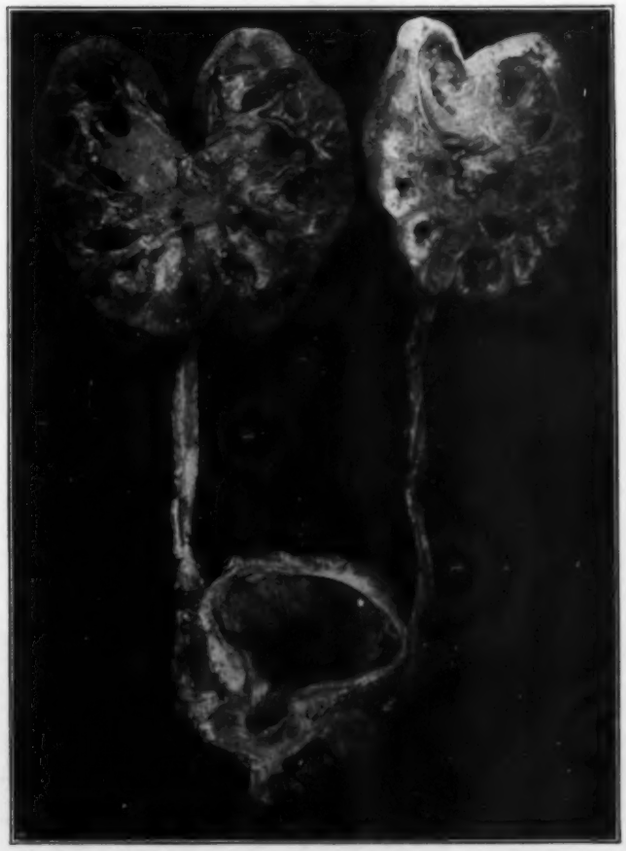

Fig. 6 (case 5).—Necropsy specimen showing large calculus in left renal pelvis with multiple small stones in right renal pelvis.

produced, and in the thousands of other guinea-pigs and rabbits of which we have records, free vesical calculi have not been observed.

The old view that malnutrition might be a factor in calculus diathesis was based on the observation that urinary lithiasis occurred most frequently among the

2. Hager, B. H., and Magath, T. B.: The Etiology of Incrusted Cystitis with Alkaline Urine, J. A. M. A. 85: 1352-1355 (Oct. 31) 1925.

poor. While this observation is of considerable interest, more recent reviews of the distribution of lithiasis in general do not attest to the preponderance of urinary calculus in particular social classes. In fact, the observations of some lead them to believe that urinary calculus occurs more frequently among those who live a sedentary life with an abundance of leisure and indulge in overstimulating foods and spirits. Social environment is perhaps not as pertinent to calculus diathesis as faulty feeding, whether insufficient or excessive.

Fig. 7.—Early stage of calculus formation induced experimentally in the bladder of a rabbit.

In recent years, the effect of vitamins and their influence on the physiologic processes have afforded an explanation of the occurrence of various diseases. In consequence, many interested in the subject of lithiasis have turned to this phase of biochemistry, hoping that some new light might be shed on the intricate and perplexing mechanism of stone production. The possibilities were early recognized by Osborne and Mendel,[3] who in 1917 reported their interesting observations on the prevalence of calcium phosphate calculi in rats which had been kept on a diet deficient in vitamin A. These observations seem to have been corroborated by Fujimaki,[4] who further noted that the urine of animals kept on a diet deficient in vitamin A and having bladder calculi was alkaline and that when the animals were fed vitamin A the urine became acid and the bladder stones disappeared.

3. Osborne, T. B.; Mendel, L. B., and Perry, Edna L.: The Incidence of Phosphatic Urinary Calculi in Rats Fed on Experimental Rations, J. A. M. A. **69**: 32-33 (July 7) 1917.

4. Fujimaki, Y.: Formation of Urinary and Bile Duct Calculi in Animals Fed on Experimental Rations, Progress of the Science of Nutrition in Japan, League of Nations Health Organization, Geneva, 1926, p. 369; cited in The Experimental Formation and Treatment of Calculi, editorial, J. A. M. A. **88**: 1080 (April 2) 1927.

Recently, McCarrison [5] performed experiments along similar lines. He obtained vesical calculi composed chiefly of earthy salts in rats fed on diets characterized by absence of protein of animal origin, deficiency of vitamin A, and excess of earthy phosphates. In 29 per cent of seventy-two animals stones developed, in 40 per cent of the females and 13 per cent of the males. In some, cystitis and earthy incrustations were noted. Since bacteriologic studies were not made, it is not possible to tell whether bacteria played a part in the stone formation. However, it is important to note that the stone formation did not appear until after fifty-six days of this unbalanced diet. Observations on other mammals subjected to a diet lacking vitamin A have not yielded similar results. Hughes,[6] experimenting with hogs, has never noted the presence of calculi in the urinary tract or bile ducts as a result of lack of vitamin A. He says:

> It might be of interest to you to know that the lack of vitamin A causes quite a heavy deposit of urates throughout the body of chickens. We have found that in some cases the uric acid content of the blood will reach as high as 150 mg. for each 100 cc., while the normal content is about the same as that of mammals or around 3 mg.

It is important to note that the majority of animals used in the experiments in avitaminosis are very young and that urinary calculi are rare in children as compared with adults. If lack of vitamin A were the essential factor in the production of lithiasis in human beings we should expect to see many more stones in children than are encountered, as children are more likely to have their diet deficient in vitamins and the effect is more pronounced than in adults.

Our experience with the production of vesical calculi by means of specific bacteria, together with the isolation of the organism in certain cases of urinary lithiasis, has naturally raised the question as to what prepares

Fig. 8.—Somewhat later stage of calculus formation induced experimentally in the bladder of a rabbit.

the soil for the favorable implantation of *Proteus ammoniae*. Early in our investigation, the importance of preliminary inflammation of the bladder was recognized.

Numerous predisposing factors of local origin have been enumerated in the etiology of vesical calculus from which a specific bacterium has been isolated. The pos-

5. McCarrison, Robert: The Experimental Production of Stone in the Bladder, Brit. M. J. **1**: 717-718 (April 16) 1927.

6. Hughes, J. S.: Personal communication to the authors.

sible influence of constitutional factors has not been so apparent. This is particularly true of the clinical cases in which metabolic disturbances cannot be so easily recognized or demonstrated. The conjecture that avitaminosis is one of the predisposing causes of lithiasis seems worthy of consideration; that it is the essential cause in the majority of instances is questionable. We are in accord with the view expressed by Hughes, who says:

> If the stones are in any way associated with deficiency of vitamin A, it must certainly be only in an indirect way. It is well known that the lack of vitamin A predisposes animals to various types of infection, particularly those located in the eyes and lungs. It might be that the lack of vitamin A would make an animal more susceptible to infection, which you have found to be one cause of a formation of calculi.

Mendel[7] also suggests some such relation between the lack of vitamin A and calculus formation. He writes:

> When we first noticed the occurrence of phosphatic calculi in rats that had been for long periods on diets deficient in vitamin A we were inclined to attribute the incidence of the stones to some sort of "lowered resistance" developed as a result of dietary deficiency. This would have accounted for the more ready invasion of the urinary tract with ammonia-producing organisms. Such a viewpoint would also be somewhat in harmony with the observations which we have made on xerophthalmia and its consequences in rats under similar dietary deficiency.

The effect of altered metabolism, resulting from various surgical experiments, on the production of urinary lithiasis is most interesting. Physiologists who have been carrying out experiments on the function of the liver have frequently noted renal lithiasis in animals after an Eck fistula had been established. We have repeatedly observed this phenomenon in the Division of Experimental Surgery and Pathology. The stones in these cases are composed practically of pure uric acid, and their origin can probably be explained on the basis of faulty metabolism. Abnormal purine metabolism has been demonstrated in animals with certain types of experimental injury to the liver. It is of interest to note that while stones are not infrequently seen in the urinary tract of dogs, they are often of the calcium oxalate variety. These observations suggest that the chemical composition of calculi may be of more significance than we have hitherto supposed and may offer, in some cases at least, a clue to their possible origin.

SUMMARY AND CONCLUSIONS

In five cases of urinary lithiasis, *Proteus ammoniae* was isolated. Calculi can be experimentally produced in the bladder by *Proteus ammoniae* under favorable conditions. It is possible that deficiency of vitamin A is favorable to the implantation of *Proteus ammoniae*.

ABSTRACT OF DISCUSSION

DR. F. T. LAU, New York: The etiology of calculi has not kept pace with the general progress of urology. We recognize the importance of heredity, climate, stasis and infection, and realize that, generally, there is a combination of two or more conditions which are causative factors. Dr. Hager has given us a real contribution on stone formation, in his isolation of the so-called *Proteus ammoniae* which, by converting urea into ammonia, produces an alkaline reaction causing the precipitation of inorganic salts in the urine. I am sorry that his experimental work did not demonstrate more free stones in the bladder as well as the encrusted type because of the more common clinical occurrence of the former. In his work on dietetic deficiency, particularly in vitamin A, it would seem that a new and important field for study has been opened. We realize that while dietary deficiency in itself does not necessarily cause stone, it is an important contributing factor. I should like to ask Dr. Hager whether he has found calculi more frequently in malnutrition cases in children, and whether he has made any study or has any statistics concerning lithiasis in children under certain ages. We are quite aware that a study of the chemical composition of a stone and the reaction of the urine are important considerations in the etiology as well as in the prevention of recurrence.

MR. R. CAMPBELL BEGG, Wellington, New Zealand: It may interest you to hear of some experiences I had in a country where stone is much more prevalent than it is here. While campaigning in Mesopotamia, I had to find some sort of treatment for the Arabs inhabiting the northern part of Asia and the region around the Upper Euphrates. There had never been any surgery in that country. The instruments we had were very crude, but with the help of a couple of teaspoons and a knife we took out many stones a day. The effect of dehydration and of climate on the formation of

Fig. 9.—Well formed vesical calculus experimentally produced in the bladder of a rabbit.

stone is very marked. In that country, we were enduring temperatures ranging between 125 and 137 F. in the shade. I think that there is nothing that approaches the region of Babylon and the Euphrates for heat. For weeks at a time we had temperatures measuring 127 or more in the shade. The problem there was to keep the body temperature as nearly normal as possible when the outside temperature is more than 130 F. The only way that this could be done was by getting sufficient evaporation to reduce the body temperature to normal. In case of heat stroke, the temperature of our men and of the Arabs would often shoot up to 112 and 115 F., taken by special thermometers. The effect of this temperature on the excretion of urine is readily surmised, and in that country the kidneys practically cease functioning. When one got up in the morning there was no thought at all of urinating. I think that this function was rarely performed more than once in twenty-four hours and then there was a very concentrated excretion. We noticed that prostatitis and complete stagnation of the whole urinary tract were common, and added to that many of the Arabs were suffering from malnutrition, were very poor, and had trachoma and ulcers. Many of them were suffering from various kinds of infection, and this we felt was forming a nidus for the development of

7. Mendel, L. B.: Personal communication to the authors.

stone. I should say that fully 50 per cent of the population had vesical calculi, and as urinary surgery had never been done, these were the size of small oranges or larger. I think that this amplifies in a very indefinite and unscientific way the observations that Dr. Hager has made.

DR. B. H. HAGER, Rochester, Minn.: Regarding the incidence of lithiasis among children, I have some data concerning children under 15. We found bladder stones in eleven out of 674, or 1.63 per cent. Ureteral stone was present in seven of 813, or 0.86 per cent, and in the kidney there was stone in fifteen out of 1,808, or 0.82 per cent, which shows a relatively low incidence of lithiasis in children under 15 years of age.

LIGATION OF THE ANGULAR VEIN IN INFECTIONS OF THE UPPER LIP

C. A. ROEDER, M.D.
OMAHA

It is well recognized today that infections of the upper lip—particularly of the carbuncular type—are always to be considered most seriously; and furthermore that in the most virulent infections no form of treatment has proved efficacious in even a bare majority of instances. The superficial infections of the upper lip and adjacent structures on the lateral portion of the nose as a rule resolve without serious results; but the deeper infections, particularly in the upper lip, wherein the subcutaneous tissues become involved—the area in which the veins lie—are far too often followed by a fatality as the result of a septic cavernous sinusitis and meningitis.

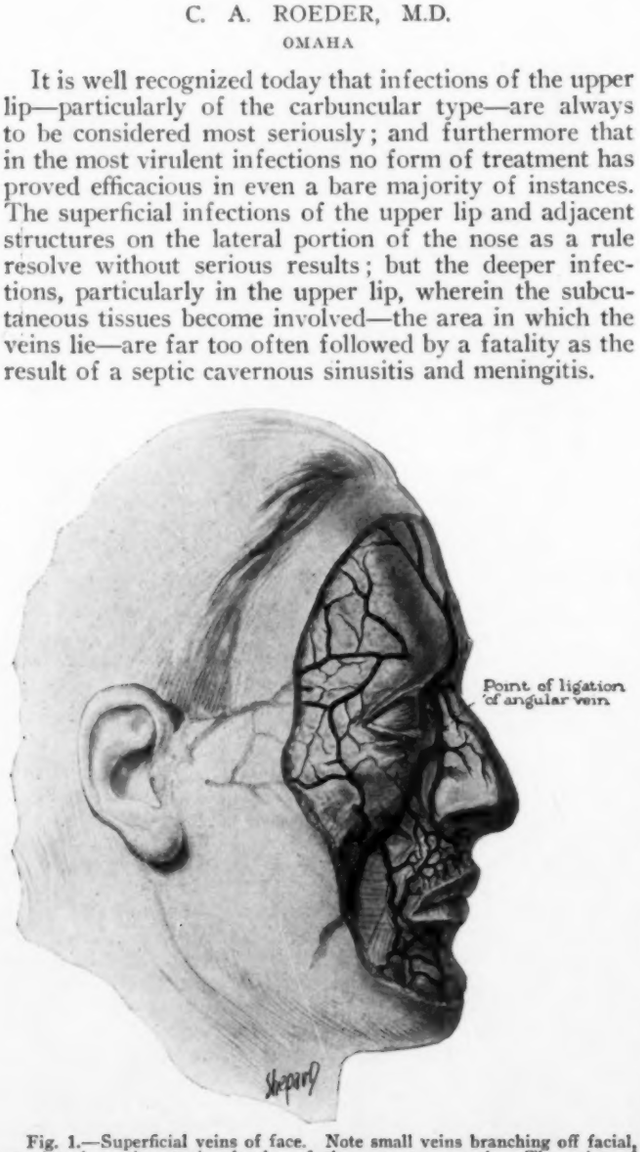

Fig. 1.—Superficial veins of face. Note small veins branching off facial, passing beneath anterior border of the masseter muscle. The point of ligation is above the branch from the side of the nose.

It is practically impossible, at present, to state in the early stages of an infection of the upper lip how far the process will proceed; and it is well known that the most serious appearing infections have resulted in recovery, with or without good treatment, and that the most innocent appearing infections have been followed by death. Owing to the high death rate, prophylactic measures, of a medical or surgical nature, in virulent appearing infections of the upper lip and areas close by, are worthy of consideration, whether they can or cannot be proved a deciding factor in the recovery of a given example. In the past ten years I have had five cases of deep infections of the upper lip—more or less of the carbuncular type—and the first four patients died, three of a septic cavernous sinusitis with meningitis and one of a meningitis without clinical signs of a septic cavernous sinusitis. After this experience I decided that in the future I would try, in the early stages of the disease, before I thought intracranial infection had taken place, a ligation of the angular vein, with the same idea of trying to prevent a transmission of the infection as is carried out in the ligation of the internal jugular vein for septic lateral sinus thrombosis.

Fig. 2.—Outside dotted line represents excursion of cautery beneath the skin: The vein has been divided between ligatures.

The cavernous sinus is connected with the superficial and deep veins of the face by the angular and the pterygoid plexus. The angular is a direct continuation of the facial and the superior ophthalmic, which in turn is a direct and relatively large extension of the cavernous sinus forward. The pterygoid plexus is connected with the cavernous sinus through an emissary vein, passing through the foramen of Visale,[1] and occasionally through an additional small vein passing through the foramen ovale; and it is connected with the superficial veins of the anterior portion of the face through the ramus profundus, which joins the facial vein at the anterior border of the masseter muscle. There are occasionally a few smaller branches lower along the anterior border of this muscle which connect with the pterygoid plexus.

Venous blood, therefore, from the upper lip has a very free and direct connection with the cavernous sinus through the angular vein. To reach the cavernous sinus through the pterygoid plexus, the blood from the upper lip (and only a small portion of it because the facial carries most of it beyond) must pass through the ramus profundus, which is a small branch. From here it must pass through the pterygoid plexus and from there

1. Poirier and Charpy: Traité d'anatomie humorale 2: 933, 1912.

through the accessory vein of Visale. Although the flow of blood through the pterygoid plexus and angular vein is in either direction, depending on the path of least resistance, only a very small portion of the blood from the upper lip, passing downward through the facial vein, could pass through the small anastomotic branches into the pterygoid plexus. Most of the blood flowing downward from the upper lip, therefore, must go directly to the internal jugular through the facial vein; and nearly all the blood in the pterygoid plexus flows downward directly into the internal maxillary vein. As to the path of least resistance from the upper lip to the cavernous sinus, there is marked contrast between the direct route through the angular vein and the indirect, as well as the much smaller, route through the pterygoid plexus.

Having lost four cases in succession of infections of upper lip, I felt that a ligation of the angular vein, before the cavernous sinus became involved, would be a procedure of very little risk and possibly of considerable value. As previously stated, prognosis here is perhaps not paralleled in its difficulty and I cannot state that the ligation I performed in the example I am reporting saved this patient from a septic cavernous sinusitis. But I can state definitely that this patient presented a most septic and dangerous appearing upper lip, with a markedly dilated angular vein. I can also state definitely that this ligation did not produce any harm and during its procedure I felt convinced that I was acting within the realms of good judgment. In a very careful search of the literature I found two references, after this article was written, of a similar procedure. Sehileau,[2] in 1910, reported a ligation of the facial vein with recovery, and Bullock,[3] in 1912, reported a similar procedure.

Fig. 3.—Note faint scar where vein was ligated. There is a small keloid on the lip, owing to the reaction from the cautery, which can be very easily corrected by a small plastic procedure.

REPORT OF ILLUSTRATIVE CASE

The patient of 45 had had a series of furuncles on the face during the past six months. The present trouble started March 7, 1927, as a small furuncle. Twenty-four hours after the onset I saw this patient, finding a suspicious appearing infection on the upper left lip, surrounded by considerable redness and swelling. Both angular veins at this time could be seen but were apparently normal. Hot applications and absolute rest did not seem to retard the progress of this infection, and in seventy-two hours the swelling and redness had greatly increased in size and the left angular vein was very much more prominent than on the day previous. The hot packs had left an opening, about one-fourth inch in diameter, in which could be seen the typical staphylococcic exudate, which was firmly fixed in situ. By this time a definite diagnosis of a carbuncle could be made and surgical therapy at the hospital was advised and immediately carried out. The temperature was 101 and the leukocytes 12,800. It appeared that in the previous two hours the left angular vein had greatly increased in diameter. An incision about one-half inch in diameter was made over the left angular vein, starting downward from the level of the inner canthus. The vein was definitely distended, probably because of a thrombosis below. It was tied between catgut ligatures and cut between. A culture from the lumen proved negative. The carbuncle was then burned out thoroughly with a small point electric cautery. During this procedure it was found that there was a purulent thick exudate undermining the lip to the midline and extending outward about three-fourths inch beyond the crater of the carbuncle. The entire cavity was thoroughly cauterized, leaving a clean granulating wound forty-eight hours later. Recovery was very satisfactory.

1426 Medical Arts Building.

2. Sehileau: Upper Lip Cellulitis: Resection of Anterior Facial Vein; Recovery, Soc. de chir., 1910, p. 123.
3. Bullock, W. O.: Upper Lip Cellulitis: Ligation of Both Facial Veins Three-Fourths Inch Below Inner Canthus; Recovery, Surg. Gynec. Obst. **14**, 1912.

CANCER OF THE ABDOMEN AND PELVIC CAVITIES

INTRAPERITONEAL INSERTION OF CAPILLARY TUBES OF RADON *

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NEW YORK

The intratumoral insertion of capillary tubes of radon is to date the most efficient single method of radium therapy in cancer. The technic of this method consists in the following:

Radon (radium emanation), an elementary body in the state of a heavy gas, is the first active product of the decomposition of radium. It is collected by means of appropriate apparatus in capillary glass tubes from 3 to 5 mm. long, built of glass or an alloy of gold and platinum. The tubes, containing between 0.3 and 1.5 millicuries of radon each, are sterilized either by boiling or by immersion in an alcoholic solution of iodine, and are inserted by the aid of a trocar into the tumor tissue. These tubes exert a comparatively weak but continuous action on the tissues, which lasts for several weeks. The cumulative action of 1 millicurie is calculated to equal 132 millicurie hours. The number of tubes varies according to the mass of the tumor.

The microscopic study of the effect of the insertion of capillaries of radon on carcinoma or sarcoma tissue obtained about two weeks after irradiation reveals the following picture: The zone of tissue nearest to the capillary shows complete necrosis and the second zone shows the degenerative process in the tumor cells, consisting of vacuolation of the protoplasm, pyknosis of nuclei, and karyolysis.

From six to eight weeks after irradiation, an entirely different picture presents itself. The necrotic tissue is absorbed and replaced by dense connective tissue, and the whole tumor shrinks in size. In some areas, one sees nothing but such connective tissue. In other areas, scattered small islands of degenerated carcinoma cells

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* Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped addressed envelop.

are noted within such connective tissue. The advantages of the intratumoral insertion of capillaries over surface application of radium are that the method allows an even distribution of small quantities of radiations throughout the tumor, and that, on account of the intimate contact of the radioactive substance with the tumor cells, the total amounts are small and local results are obtained without any general effect on the organism.

In a great number of cases of epithelioma of the skin treated by this method, I have observed that within from two to six weeks after the insertion the ulcer is healed and replaced by smooth and pliable skin. I have also obtained highly satisfactory results in carcinoma of the cervix, intra-oral cancer, and cancer of the urinary bladder, the prostate and the breast.

I have observed that when the insertion is made into a solid nonulcerated tumor situated subcutaneously and

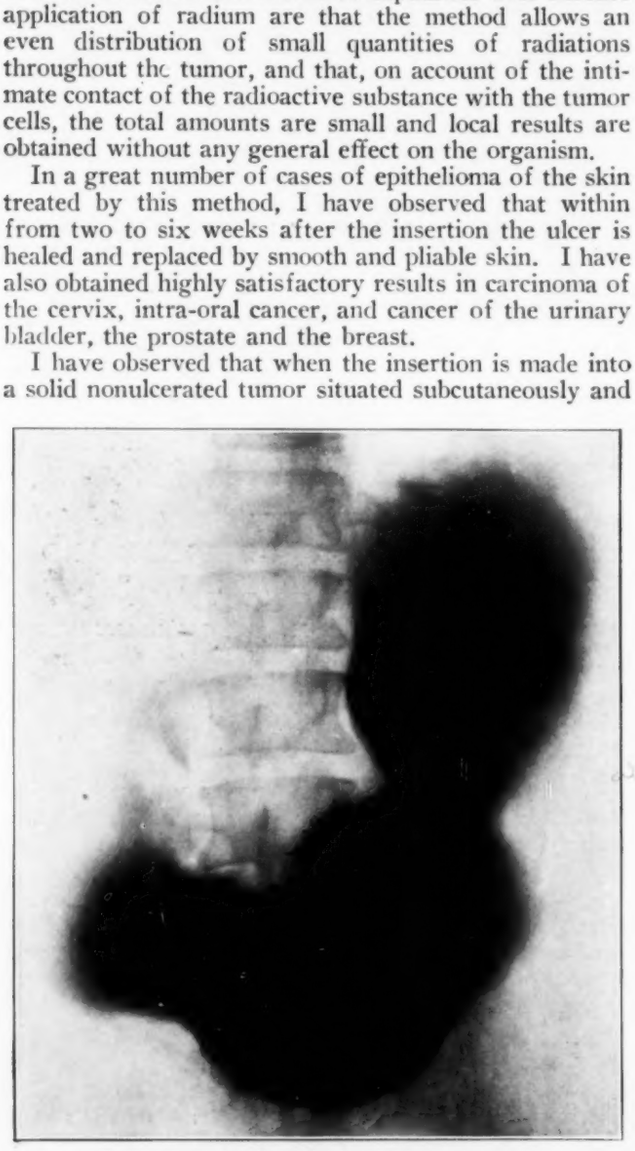

Fig. 1 (case 1).—Immediately after a barium meal.

covered by a normal skin, and when the capillaries are placed at correct distances, the tumor shrinks, but there is no sloughing or ulceration of the tumor. It seemed then reasonable to presume *a priori* that an insertion may be made into a tumor covered by peritoneum without causing sloughing of the tumor and consequent peritonitis.

For several years I have used this method extensively in intraperitoneal tumors of the gastro-intestinal tract, the uterus, the ovaries and retroperitoneal tumors. An exploratory laparotomy is first performed, and when it is found that the tumor itself is inoperable, i. e., cannot be completely removed surgically, the capillaries of radon are inserted into the tumor; this is followed by the necessary palliative surgical procedures. The laparotomy incision is immediately closed.

In this paper I am reporting a few of the cases of each group.

CARCINOMA OF THE PYLORUS

Cancer of the stomach is the most frequent type of cancer; about one third of all the cancers in men and about one fifth of all the cancers in women appear in this organ. A large percentage of the patients when they first come for examination are found to have such an advanced stage of the disease that surgical intervention cannot be attempted. In many of the patients who are in a sufficiently good state of general health to admit of an exploratory laparotomy, no further surgical procedure can be attempted. In a certain number of patients only a palliative procedure, such as gastro-enterostomy, is done, and in the smallest number of patients a radical gastrectomy may be performed.

Whenever an exploratory laparotomy is done in cases of carcinoma of the pyloric end of the stomach, and a gastro-enterostomy is found to be indicated, an insertion of capillaries of radon precedes it.

The following four cases illustrate this method:

CASE 1.—*History.*—A white man, aged 50, was admitted to the institute, Aug. 11, 1925, complaining of pains in the stomach and back for two years; vomiting at night, loss of appetite and loss of weight. About two years prior to admission, the patient developed a pain in the epigastrium radiating to the back. In conjunction with this, he vomited daily, usually at night about 9 or 10 o'clock. There was also a marked loss of appetite.

Examination.—The abdomen was slightly scaphoid in contour. The liver was felt 1 inch below the costal margin; it was of normal consistency and not nodular. Midway between the umbilicus and the xiphoid process to the right of the midline could be felt a rounded firm mass the size of an orange, quite nodular and apparently not attached to the abdominal wall. It was not tender on pressure. No other masses were palpated anywhere. The spleen and kidneys were not felt, and no large, discrete glands were present. Rectal examination did not reveal any additional pathologic change. A provisional diagnosis of carcinoma of the pylorus was made.

A roentgen-ray examination, August 24, prior to operation, showed the stomach markedly atonic in type and dilated. Even in the prone position, the stomach lay 7 cm. below the iliac crests. No filling defect of the stomach or duodenum was observed. Two and six hours after eating, more than half the meal was still retained in the stomach. Twenty-four and fifty-four hours after eating, more than one third of the meal was still retained in the stomach (figs. 1 and 2).

August 26, the patient was in fair general condition. In view of the complete obstruction, a gastro-enterostomy seemed indicated. A provisional diagnosis of marked pyloric obstruction was made; the etiology could not be determined from the roentgenograms.

Operations and Result.—September 21, I inserted radium and performed a gastro-enterostomy. An upper right rectus incision was made. A very dense neoplasm involving principally the anterior gastric wall in the prepyloric and pyloric regions was found. It extended up to the lesser curvature and was deep enough to cause pyloric obstruction. The lesser omentum with the regional lymph nodes were also involved. The liver and gallbladder were free grossly. A biopsy was done on a small redundant part of the neoplasm in the central and upper part of the lesion; then radon capillaries were inserted into the neoplasm transperitoneally, eight at intervals throughout the anterior aspect and four through the small part of the tumor which "saddled" over onto the posterior wall. Then a posterior gastro-enterostomy was done. The wound healed by primary union and without any rise in temperature. The patient's general condition improved continually.

October 11, the abdomen was soft throughout. The pyloric tumor was not palpable. The general condition of the patient seemed to be very good. In three months, the patient gained 23 pounds (10 Kg.).

Jan. 10, 1926, the mass was not palpable, indicating a diminution in the size of the tumor. The general condition was such that I considered that an attempt at removal of the pylorus should be made. The patient had in the meantime received a complete course of high voltage roentgen-ray treatment.

February 3, a gastrectomy was performed. An incision was made parallel to the old incision and the abdomen exposed. The stomach was found slightly adherent, particularly to the pancreas. No glands were felt in the abdomen. Two intestinal clamps were applied to the stomach proximal to the tumor, and an incision was made between them. The tumor was removed with a portion of the duodenum and pancreas. A great deal of bleeding was encountered at the pancreatic surface which could not be controlled by ordinary methods. Clamps were allowed to remain on the vessels, and Mikulicz's tampon was applied to the oozing surface. At the close of the operation, 450 cc. of saline solution was given intravenously. Clysis was given again during the following two days. February 5, all the clamps were removed, together with the compression drains and secondary sutures of the skin.

February 8, there was a diffuse drainage of bile, and the necrotic tissue was still firmly attached in the operating field, so that it was difficult to determine whether the ducts or the bladder were involved. The rest of the wound was in good shape, and the general condition of the patient was fair. The patient, however, refused to take nourishment consistently, and died, February 27, of marked asthenia.

Pathologic Examination.—The pathologist reported adenocarcinoma of the stomach and metastatic carcinoma in the lymph nodes. The tissue of the removed pylorus showed extensive connective tissue formation, with scattered carcinoma cells and areas in which active fields of adenocarcinoma were noted.

CASE 2.—*History.*—A white woman, aged 58, admitted to the institute, Oct. 31, 1925, complained of pain, which she first noticed five years prior to admission in the vicinity of a laparotomy scar. There had been an operation for ovarian cyst eighteen years before. This pain would disappear for two or three months and then return. It was very slight, and was neglected until it returned in the summer of 1925, accompanied by indigestion. The indigestion took the form of a pain in an area 2 inches to the left of the umbilicus and 2 inches in diameter. It was relieved by belching of gas, after which the patient would feel faint. She had some loss of appetite, chiefly occasioned by a fear of eating. There was no vomiting, but she had lost 15 pounds (6.8 Kg.) in six months.

Fig. 2 (case 1).—Fifty-four hours after a barium meal.

Examination.—There was a scar in the median line, running from the umbilicus to the pubis. The abdomen moved normally with respiration. There appeared to be a slight protrusion of the abdomen in the region of the epigastrium 2 inches below the xiphoid and 2 inches in diameter. On palpation, a mass could be made out. It was not tender. The liver, spleen and kidneys were not palpated. There was an area of moderate tenderness in the left iliac region.

Roentgen-ray examination prior to operation disclosed an irregularity in the pars media, along the greater curvature, at a distance of 3 cm., with a failure of visualization of the pyloric end of the stomach for a distance of 5 cm. which was constantly present in all films (fig. 3). Two and six hours after eating the residue of one fourth of the meal was seen proximal to the apparent lesion. Twenty-four hours after eating, the stomach was empty. Stasis was present throughout the colon.

A provisional diagnosis was made of carcinoma of the pyloric portion of the stomach, including both the greater and the lesser curvature.

Operation and Result.—November 10, I performed a gastro-enterostomy and radium insertion. An upper right rectus incision about 3 inches long was made. It was found that the area of neoplastic involvement was in the prepyloric portion of the stomach. Biopsy was done by incising into the serosa of the stomach; four capillaries of 0.3 millicurie each were immediately inserted into the bed of the resulting opening, and the latter was closed with plain gut. Eleven capillaries of 0.3 millicurie were inserted into the neoplastic area. The usual posterior gastro-enterostomy was done. The wound healed by primary union, and symptoms disappeared. The patient's general condition improved.

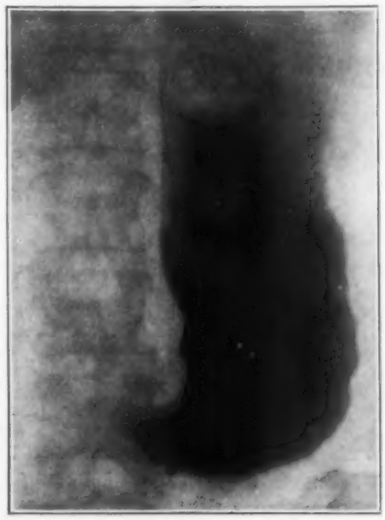

Fig. 3 (case 2).—Immediately after a barium meal; taken before the operation.

Roentgen-ray examination one year after the operation showed a rapid passage of the meal through the stomach with a filling of the proximal small intestines. There was some irregularity along the greater curvature adjacent to the stoma (fig. 4).

Two hours after eating, a minute residue was present in the region of the stomach.

Six hours after eating, the stomach was empty.

The patient's condition appeared to be improved since the last examination. The patient received local applications of radium over the epigastrium after the operation. She also received a course of high voltage roentgen-ray treatment over the abdomen. She had been on a soft diet. So far, she had more than maintained her weight, and her general condition was, in the main, satisfactory.

The patient was last seen, Dec. 16, 1926. The tumor mass had not increased in size since the last examination. The general condition of the patient seemed to be fairly satisfactory.

CASE 3.—*History.*—A white woman, aged 44, was admitted to the institute, Oct. 27, 1926. About two years before, the patient had had slight pain in the epigastrium independently of meals; there was no vomiting. This condition kept on until six months before admission, when she began to have crampy pain in the epigastrium during both day and night. She began to vomit at times, independently of the intake of food. The vomitus was coffee colored. She also had gas belching. The patient went to the New York Hospital, was there for one month, and left the hospital somewhat relieved. About July 28, she vomited blood. The pain in the epigastrium appeared again and with more severity; she was gradually losing weight, and when seen had lost 20 pounds (9 Kg.). Because of the continuous pain, vomiting and weakness, the patient went finally to Fordham Hospital, remained there about ten days, and was transferred to the institute.

Examination.—The patient was fairly well developed but poorly nourished; she appeared to have lost weight and was very anemic. The abdomen was not distended, but was soft

and flabby. The liver and spleen could not be felt. In the epigastrium a mass could be felt extending from the umbilicus upward 5 cm. to each side of the linea alba. The mass was hard and movable on respiration and palpation, and was tender to palpation.

Rectal and vaginal examination did not show any abnormalities. A provisional diagnosis of carcinoma of the stomach was made.

Roentgen-ray examination of the gastro-intestinal tract, October 29, showed the greater curvature of the stomach 9 cm. below the intercostal line. The stomach was atonic in type and dilated with an inconstant type of irregularity and filling defect of the pyloric (fig. 5).

2 hrs. p. c. most of the meal still present in the stomach.
6 hrs. p. c. most of the meal still present in the stomach.
24 hrs. p. c. ½ of the meal still present in the stomach.
48 hrs. p. c. ⅓ of the meal still present in the stomach.
72 hrs. p. c. ⅙ of the meal still present in the stomach.

A provisional diagnosis of marked pyloric obstruction was made. The origin of this could not absolutely be determined roentgenologically, although a pathologic condition of the pylorus was suspected.

Fig. 4 (case 2).—Immediately after a barium meal; taken one year after the operation.

A gland removed at operation showed metastatic adenocarcinoma.

October 30, the patient appeared anemic and emaciated. The abdomen was soft but not distended. In the midline 1 inch above the umbilicus, there was a mass, the size of which could not be definitely made out. While the position of that mass was low for pyloric carcinoma, the roentgenograms showed a very distended low-lying stomach. Therefore, it seemed most probable that the condition was carcinoma of the pylorus with a twenty-four hour retention.

An exploratory operation with a possible gastro-enterostomy and radium insertion was decided on.

Operation and Result.—November 1, I inserted radon in the tumor, excised a lymph node and performed a posterior gastro-enterostomy. A left upper midrectus incision was made. The stomach was found to be involved in the prepyloric and pyloric regions, chiefly over the lesser curvature, the involvement causing stenosis of the pylorus. Bands of adhesions were found all about the stomach. The involved portion of the stomach was hard and nodular to palpation. Many hard and nodular mesenteric and retroperitoneal glands of all sizes were found, and one was removed for pathologic examination. Then fourteen capillaries of radon, each 0.3 millicurie in strength, were inserted throughout the tumor mass, but chiefly in the proximal portion of the stomach. The total amount of radon inserted was 4.2 millicuries.

A posterior gastro-enterostomy was then performed in a classic manner, and the abdomen was closed without drainage.

The pathologist reported that the lymph node removed at operation showed metastatic adenocarcinoma.

The patient made an uneventful recovery. She gained about 35 pounds (16 Kg.), and at the last roentgenographic examination, May 14, 1927, the gastro-enterostomy was functioning perfectly and the general condition of the patient was satisfactory (fig. 6).

CASE 4.—A. M., a woman, aged 65, entered the Lexington Hospital, Oct. 30, 1926, complaining of epigastric pain for the three months previous to admission and a loss of 23 pounds (10.4 Kg.) during the past six months. There had not been any nausea, vomiting, hemoptysis, bloody stools or jaundice.

Examination.—The patient was somewhat emaciated and anemic; the abdomen was soft and relaxed and no fluid was noted. In the epigastrium, there was a firm, slightly tender mass about the size of a baseball. This mass was movable within certain limits. No other masses were palpable, and no other abnormality was found anywhere. A clinical diagnosis of carcinoma of the stomach was made.

Roentgen-ray examination showed a distinct narrowing in the pyloric portion of the stomach involving the greater curvature for a distance of about 3 cm. (fig. 7).

Seven hours after eating there was a moderate residue in the stomach proximal to the narrowing. The head of the meal had reached the hepatic flexure (fig. 8).

Twenty-four hours after eating, traces were still present throughout the colon.

A provisional diagnosis of carcinoma of the pyloric portion of the stomach was made.

Operation and Result.—October 31, I opened the abdomen by a median incision 3 inches long; the stomach was exposed, and a tumor mass was found involving the pyloric end of the stomach; lymph nodes of the small omentum were found to be infected. Therefore, pylorectomy was not done, but eighteen capillaries of radon, 3 millicurie each, were inserted throughout the tumor and a classic posterior gastro-enterostomy was done. A small drain was inserted and the peritoneum, fascia and muscles were united with two rows of continuous catgut sutures, silkworm-gut being used for the skin.

The patient made an uneventful recovery. There was no rise in temperature throughout the postoperative course, and the wound healed by primary union. At present, seven months after the operation, the patient is in good condition and is taking food without any pain or discomfort.

COMMENT

The analysis of the four cases presented here shows that gastro-enterostomy plus radium insertion was followed in all the patients by an uneventful recovery. There was no rise in temperature, and no peritoneal irritation or subsequent sloughing of tissue. In a word, the insertion of radon did not add in the least to the surgical hazard of the gastro-enterostomy. In case 1, an attempt was made to follow this subsequently with a radical removal of the pyloric tumor. The result was fatal and it is probably inadvisable to do that second operation in any case in which a palliative gastro-enterostomy and radium insertion has been done. However, a gross inspection of the pyloric tumor at the second operation showed distinctly that the tumor had shrunk, and the microscopic analysis showed that while there was active carcinomatous tissue present, there was also an extensive newly formed connective tissue surrounding all the islands of carcinoma. Patient 2 is doing well, sixteen months after the operation.

The method presented here is not a radical method of treatment of cancer of the stomach, but is a palliative

procedure which may prolong life more than a gastro-enterostomy alone and, what is possibly of greater importance, will check for a time the peripheral growth of the pyloric tumor and therefore may prevent the closure of the gastro-enterostomy stoma as a result of the ingrowth of the tumor.

Inoperable carcinoma of the stomach presents a most hopeless type of cancer. Surface application of radium

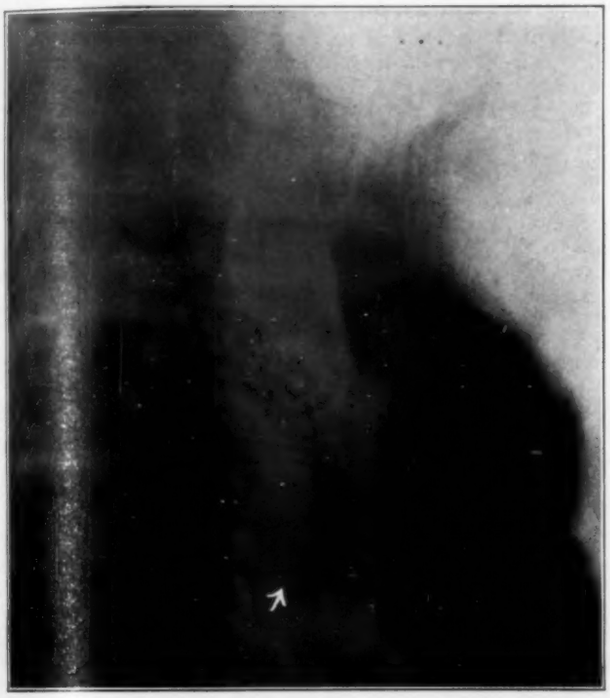

Fig. 7 (case 4).—Immediately after a barium meal.

alone is inefficient in the majority of cases. Deep high voltage roentgen-ray therapy does not influence this class of cases and is followed frequently, in my experience, as well as in that of other investigators, by severe cachexia.

CARCINOMA OF THE INTESTINES

Intraperitoneal insertion of capillaries of radon into malignant tumors of the intestines is indicated practically under the same circumstances as in the tumors of the pylorus, i. e., when it is found at an exploratory laparotomy that the tumor itself cannot be completely removed surgically, then the capillaries of radon are inserted into the tumor and this is followed by the necessary surgical procedure. The following three cases are selected from this group. Case 5 presents a tumor of the second part of the duodenum.

CASE 5.—O. B., a man, aged 55, was admitted, Oct. 3, 1921, to the service of Dr. Jerome Lynch at St. Bartholomew's Hospital, with symptoms of pain in the stomach, nausea and severe attacks of vomiting. The patient had lost 45 pounds (20 Kg.) within six months. There was a tumor in the middle line of the abdomen, 2 inches above the umbilicus, about the size of an orange, and freely movable. A provisional diagnosis was made of a tumor of the hepatic flexure. Roentgen-ray examination disclosed a complete obstruction in the pyloric region. None of the barium suspension passed beyond the pylorus. Laparotomy was performed, October 4, by Dr. Lynch. The tumor was situated in the second part of the duodenum and could not be removed surgically. I inserted radon capillaries throughout the tumor, and then a gastro-enterostomy was performed. November 9, the patient was discharged clinically improved; there was no vomiting, and the bowel movements were regular. The patient had gained 4 pounds (1.8 Kg.) since the operation, and the mass appeared to have receded in size.

The essential points in this case are that the whole volume of the tumor shrank considerably, and this shrinkage apparently took place also in the depth of the tumor, so that the lumen of the duodenum became patent and the original obstruction of the pylorus was partially relieved.

CASE 6.—*History.*—S. K., a woman, aged 47, admitted Nov. 20, 1925, had first noticed cramps and constipation one year prior to admission. The pain was fairly severe, mostly in the lower abdomen, and bore no relation to meals. It lasted for three months, became irregular and stopped. Two months before admission she had a severe recurrence of these symptoms. The pain became severe and the constipation almost complete. There was no loss in appetite. She did not vomit. Pain, during the last month, was practically constant, starting in both groins and moving later to the left lower quadrant.

Examination.—The patient was somewhat emaciated. On attempted palpation of the left half of the abdomen, a severe spastic wave immediately occurred which embraced the splenic and sigmoid flexures. This contracted, sausage-like mass seemed to be freely movable in the abdomen. It measured 8 inches in length and 2½ inches in diameter. To the left of this there was another sausage-like mass, 5 inches long and 1 inch in diameter. A bimanual vaginal examination showed a lacerated cervix, and immediately over it the mass described on abdominal examination.

Roentgen-ray examination, November 24, showed a moderate degree of dilatation of the sigmoidorectal pouch. The colon showed a narrowing and some irregularity at a point opposite the third lumbar vertebra, and just to the left of it the sigmoid appeared redundant as a whole. The narrowing

Fig. 8 (case 4).—Seven hours after a barium meal.

was about 3 cm. in length, and the opaque mixture in this region passed through a very narrow canal which varied from 5 cm. to 1 cm. in diameter (fig. 9).

The patient was obstipated, and while the area in the upper sigmoid where the tumor was located seemed to be bound down to the posterior abdominal wall, a colectomy was deemed feasible. A diagnosis of carcinoma of the splenic flexure was made.

Operation and Result.—December 8, I performed a first stage colectomy, and December 12, the second stage was accom-

plished by clamping the peripheral end of the sigmoid colon and freeing the central end by means of a cautery. December 29, nine capillaries of 0.3 millicurie each were inserted in the septum or "spur" formed by the proximal and distal loops of the colostomy. Feb. 5, 1926, the third stage of the colectomy was done attempting to reestablish the intestinal circuit, but this attempt was not successful, and March 9 it was tried again with complete success.

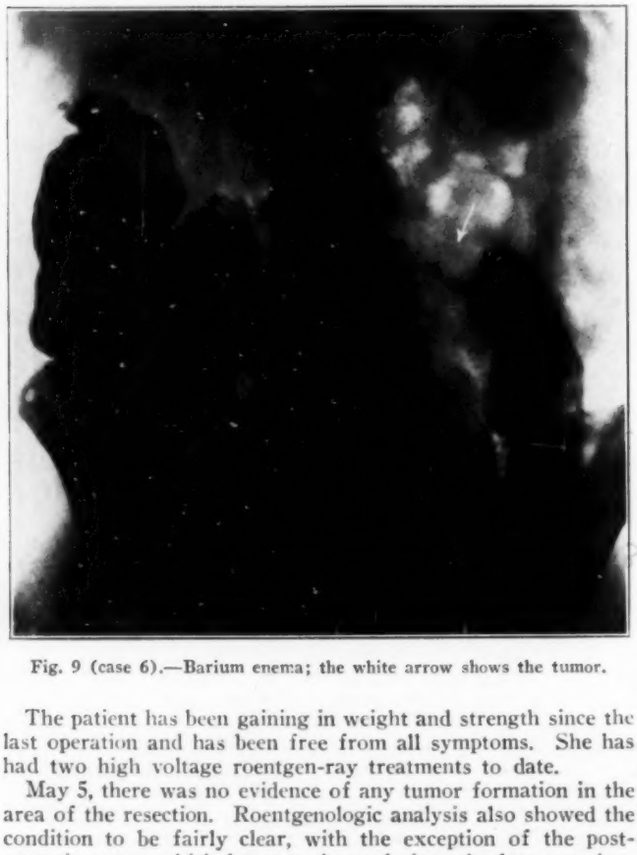

Fig. 9 (case 6).—Barium enema; the white arrow shows the tumor.

The patient has been gaining in weight and strength since the last operation and has been free from all symptoms. She has had two high voltage roentgen-ray treatments to date.

May 5, there was no evidence of any tumor formation in the area of the resection. Roentgenologic analysis also showed the condition to be fairly clear, with the exception of the postoperative area, which has not changed since the last examination (fig. 10).

In this case, the condition found at the operation made it necessary to postpone the insertion of radon for three weeks, and the insertion was done not actually intraperitoneally but nevertheless into the intraperitoneal part of the stumps of the colon.

CASE 7.—*History.*—A white man, aged 70, admitted to the Lexington Hospital, March 30, 1925, for two months had been having pain in the rectum especially on defecation, with marked tenesmus, and he had lost 15 pounds (6.8 Kg.) in the last few months. There were no tarry or bloody stools to his knowledge, but his physician noticed blood in the stools. The latest change had been loss of bowel control.

Examination.—The patient was somewhat emaciated and cachectic. The abdomen was soft and flat; the rectus muscle in the upper half was somewhat rigid, but no masses were felt anywhere. The liver and spleen were not palpable. On rectal digital examination, at a distance of 1½ inches from the anus the finger encountered a hard, nodular mass in the center of which was a crater-like opening into which the examining finger passed for a distance of three-fourths inch. The finger was then surrounded by tumor tissue which was hard and ulcerated throughout. The finger passing out of the crater and entering into the rectal fold between the normal mucous membrane and the tumor mass found the latter to be annular in nature, and there was no spot where the mucous membrane was free from tumor. It bled readily on palpation.

Proctoscopic examination showed the tumor mass to be pinkish, bleeding readily and ulcerated throughout. A diagnosis of carcinoma of the rectum was made.

Operation.—April 2, I performed a laparotomy colostomy and intraperitoneal radium insertion into the tumor mass. I made a left rectus incision about 4 inches in length, and opened the abdomen in the usual manner. The sigmoid was picked up and traced to a large indurated mass at about the injunction of the sigmoid and the rectum. This mass was very firm and adherent to the bladder. Capillaries of radon were implanted into the mass, and a colostomy was then performed. The second stage was completed, April 5, 1925.

April 11, 1925, under ether anesthesia, the external sphincter muscle was dilated and with the finger in the rectum as a guide, radon needles were inserted into the tumor mass. The patient made very satisfactory progress following the operation.

The patient died of asthenia a year and a half after the operation, having been fairly comfortable throughout the interval. In this case the combined palliative operations undoubtedly prolonged his life and made him comfortable.

Generally, the intraperitoneal insertion in cases of carcinoma of the rectum does not add to the hazard of the operation; frequently it prolongs life, as stated before, and, what is of very great importance, it prevents the tumor mass encroaching on its upward growth and closing the colostomy opening.

In carcinoma of the upper rectum and lower sigmoid, as this case illustrates, the first operation generally consists of a left rectus incision laparotomy, an intraperitoneal radium insertion into the tumor mass, and colostomy. At a subsequent sitting, the radium insertion is done into the lower segment of the tumor from below, and in this manner an attempt is made to cover the whole tumor with the radium insertion.

CARCINOMA OF THE CERVIX

The outstanding fact in the whole field of the therapy, by surgery or radiation, of cervical cancer is that the

Fig. 10 (case 6).—Barium enema; the white arrow shows the area of the anastomosis.

results become poorer the more the process advances into the vaginal wall, the broad ligaments, the other pelvic structures and the regional lymph nodes. That surgical removal must fail in all these cases is evident, since dissection must be done within an area infected with cancer cells and serves only to disseminate these

cells through the opened lymph and blood channels. The failure of the present methods of radiotherapy, on the other hand, must be due to the fact that the radiations do not reach with the necessary intensity into all the distant areas involved in the process. That radium in any form introduced through the vagina cannot influence a carcinoma high up in the pelvis unless the quantities are so large that normal vital organs are injured is an established fact. Large quantities of radium, placed over the abdomen in combination with vaginal irradiation, may influence a certain number of cases.

For a time, it was hoped that by the aid of the high voltage roentgen-ray apparatus and tubes much better results would be obtained. But even with all these methods combined, not more than 20 per cent of the clearly inoperable cases with involvement of the broad ligaments and the regional lymph nodes can be influenced. It is thus self evident that a constant search for any additional method of radiotherapy is more than justified. Different methods were tested, and finally I put into practice the following general scheme: A thorough examination of the patient is made and if it is determined that the carcinoma is confined to the cervix and the vaginal wall, then radon capillaries are inserted through the vagina, and this is followed by a course of high voltage roentgenotherapy. In cases in which the broad ligaments are involved and there are fixed pelvis masses palpated, a laparotomy is performed.

The patient is placed in a Trendelenburg position, and the capillaries are inserted into carcinomatous tissue wherever it is found; i. e., the broad ligaments, the spaces between bladder and uterus and between uterus and rectum, the regional lymph nodes and also the supravaginal portion of the cervix. The operation is in some cases followed by a reaction with high fever which generally subsides in a few days. In other cases, no reaction follows the intraperitoneal insertion of the capillaries, and the patients make an uneventful recovery.

The presence or absence of reaction does not depend on the extent of the growth or the amount of radon used but on complication by a bacterial infection. After the patient has recovered completely from the effects of the operation, he receives a course of high voltage roentgen-ray therapy.

The analysis of the cases of carcinoma of the cervix shows that patients recover from the operation even when there is a severe reaction following the operation. And, what is still more significant, after an intraperitoneal insertion of radon capillaries, a panhysterectomy may be performed with ease, and the patient remains well after both operations. It must be stated here, however, that as a general rule I am not in favor of hysterectomy after irradiation.

The method is fairly easy of execution for any trained surgeon, and the risk to the patient is not very great. On the other hand, the method is capable of placing the source of radiation in intimate contact with carcinomatous tissue everywhere. In combination with correct high voltage roentgenotherapy it ought to improve considerably the therapeutic results in the advanced inoperable conditions, particularly when the broad ligaments, and the spaces between the uterus and the bladder and the uterus and the rectum, are involved. Since, as has been stated, in this type of case less than 20 per cent may be benefited even with the best methods of radium and roentgenotherapy employed at present, it is imperative that this additional method of intraperitoneal insertion of buried capillary glass tubes be given a thorough trial.

CONCLUSION

The immediate results obtained in the series of cases here reported indicate that an intraperitoneal insertion of capillaries of radon can be performed in the course of an exploratory laparotomy, or in the course of an exploratory laparotomy plus palliative surgery of any type, without adding to the hazard of the operation and at the same time causing, in a number of cases, a shrinkage of the tumor growth and subsequent prolongation of life and comfort.

It will be possible to obtain a correct evaluation of the method only after a much larger number of cases have been treated in a similar manner and the results analyzed. It seems to be a method which is worth trying by surgeons operating in similar types of cases.

119 West Seventy-First Street.

ABSTRACT OF DISCUSSION

DR. BARNET JOSEPH, New York: Again the word palliation in this class of cases! I have had the privilege of watching Dr. Levin's work in the majority of the cases presented in this paper, and the least that can be said is that the patient's comfort has been increased multifold in comparison to that which follows a gastro-enterostomy. In one of the patients, in particular, such good function resulted from this procedure that it became a question whether all patients with a lesion anywhere in the stomach should not receive radium insertion just for the beneficial effects resulting from its use. We noted a very queer result in one of the cases not reported here, and that was that whereas an achylia gastrica existed before the operation (the patient had a pyloric obstruction), three months after operation, by the method employed by Dr. Levin, hydrochloric acid appeared, and six months after operation it was really what one might term a high normal. That is certainly an interesting physiologic proposition. We were much surprised by this finding. I dare not discuss the question of intraperitoneal insertion into the pelvic structures, because I have not observed very many of the patients; but, clinically, I doubt very much whether there is any type of results equal to those in which there has been, if not altogether a frozen pelvis, a partly frozen pelvis. It might be noted that in the latter type of patients there is more of a reaction after intraperitoneal insertion than in the gastric cases. Why that is so is a question that I wish Dr. Levin would answer.

DR. ISAAC LEVIN, New York: As far as the reaction is concerned, reaction takes place only when one is dealing with the cervical or rectal case in which there is necrotic material and an additional infection is present. Then a high temperature develops which lasts three or four days and then subsides. All I should like to add further is that I wish that the members of this section, whether they are performing operations themselves or are allied with an operating surgeon, would test this method in a large number of cases and then report to us three or four years later. In this way we may be able to see what can be accomplished. I feel quite confident that a great deal more than ordinary palliation could be obtained with this method of treatment.

Consumption of Candy.—In recent years the consumption of candy has increased to such huge proportions that it now averages about 5 pounds per capita per year. The manufacture and sale of 500,000,000 pounds of candy involves its being handled by approximately 100,000 persons, of whom some are slovenly in their habits, some are disease carriers, and some are actually diseased. It would be helpful if we knew the extent of the danger involved in the consumption of candies.—Weinzirl, J.: *Am. J. Pub. Health* **17**:708 (July) 1927.

THE ACTION OF ULTRAVIOLET IRRADIATION ON THE BACTERICIDAL PROPERTY OF THE BLOOD*

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The experimental facts on the physiologic action of the ultraviolet rays may be divided into three outstanding groups of theoretical and practical importance: the effect on growth and nutrition, the inhibitive action on bacterial growth, and the influence on the antimicrobic resistance of higher organisms. Experimental work of recent years has been focused almost exclusively on the first problem, and these investigations on the action of ultraviolet rays on growth, nutrition and germination have yielded many conclusive results. On the other hand, the more ancient investigations on light as an anti-infectious and anti-inflammatory agent have not revealed much information of an exact nature. Most of the latter work has been based on clinical observations, but, convincing as clinical evidence may be in demonstrating the effectiveness of actinic rays in climatic cures, such experiments always fall short of proving scientifically the value of each individual factor in climatic treatment. While there is no doubt about the selective action of a very definite portion of the solar spectrum on cholesterol, and through it on the calcium and phosphorus metabolism in rickets, we are very much in the dark concerning the numerous factors involved in the climatic treatment of infectious diseases. Therefore, we have to dispense more or less with the classic and irrefutable experience of the famous pioneers in light treatment, Bernhard [1] and Rollier,[2] and their numerous followers, as we are more particularly interested in this investigation in defining the action of ultraviolet rays alone on the antibacterial action. For this reason, artificial sources of radiation afford a better opportunity than natural sources of radiation for studying the specific action of the different fractions of the spectrum on immunity.

Since Finsen,[3] the first to use rays from an electric arc for treating skin lesions locally, a number of investigators have tried to reveal the secret of the apparent anti-infectious power in natural light or artificial light. Finsen himself believed in the direct bactericidal effect on the tubercle bacilli enclosed within the lupus tubercles. The retarding and killing action of ultraviolet rays on bacterial growth in suspensions had previously been demonstrated by Downes and Blunt,[4] Duclaux,[5] Robert Koch [6] and Roux.[7] However, the absorption rate of the most powerfully bactericidal rays of shorter wavelengths than 3,200 angstrom units by various mediums has been shown to be extremely high (Hasselbalch,[8] and Guttmacher and Mayer [9]). This, of course, precludes any marked direct effect on the organisms contained within mediums which absorb the rays. Therefore, we cannot attribute any supposed anti-infectious property of ultraviolet radiation on general and focal infections to direct bactericidal action. This property, if any, has to be ascribed to activation or enhancement of the body ability to kill bacteria.

It is surprising, in view of the immense number of experiments on light biology, that up to 1924 practically nothing had been done to get experimental evidence on this problem of surpassing importance. Leonard Hill and his co-workers [10] seem to have been the first to test the effect of artificial radiation on the bactericidal property of the blood. Their idea was to compare the killing power of blood for staphylococci before and after animals or human individuals had been exposed to various radiations. Unfortunately, they studied only the changes taking place one, two and four hours after exposure to light, and in consequence the improvement obtained in their test cases does not permit of any definite conclusions on the action of consecutive radiations analogous to a systematic treatment with ultraviolet rays.

The object of our investigation was to test the bactericidal property of the blood in various individuals before and after a course of routine quartz lamp radiation as ordinarily used in the present-day clinical treatment of various functional and pathologic disorders. In choosing our cases we selected patients of the type which is generally regarded as being apt to be improved by ultraviolet irradiations: first, those whose outdoor life had been very much limited because of deformities; second, patients convalescent from some infections in the near past, and, third, patients with rickets. Most of the subjects used had been confined to the hospital for a long period. Their ages varied from 1 to 16 years. In addition, three normal rabbits were tested before and after four weeks of ultraviolet irradiation.

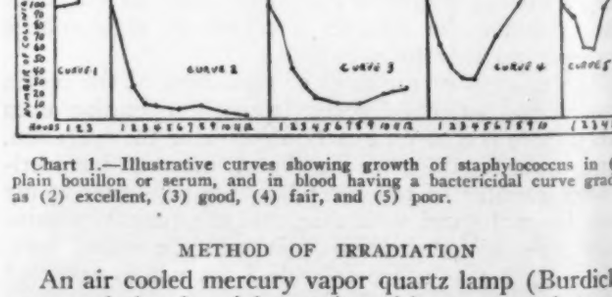

Chart 1.—Illustrative curves showing growth of staphylococcus in (1) plain bouillon or serum, and in blood having a bactericidal curve graded as (2) excellent, (3) good, (4) fair, and (5) poor.

METHOD OF IRRADIATION

An air cooled mercury vapor quartz lamp (Burdick) was used, the ultraviolet portion of its spectrum between wavelengths 2,000 and 3,100 being 35 per cent of the energy contained between 2,000 and 7,000 wavelengths. Daily exposures to the front and back of the entire body were given, starting with 35 inches distance for three minutes, increasing it by one minute and approaching it 1 inch daily until a maximum exposure of twenty minutes at 25 inches was given. The treatment was kept up from fourteen to eighty days. Otherwise, there was

* From the Pediatric Department of the State of Wisconsin General Hospital.

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3. Finsen, N. R.: Ueber die Anwendung der chemischen Lichtstrahlen in der Medizin, Berlin, 1899.
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9. Guttmacher and Mayer, quoted by Mayer, Edgar: Clinical Application of Sunlight and Artificial Radiation, Baltimore, Williams and Wilkins Company, 1926.
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no deviation from the ordinary regimen, the diet being a mixed one with a liberal amount of C vitamin but no cod liver oil. The weight curve in most of the cases did not show any remarkable change, except for a few with a considerable gain. The general clinical condition of all treated cases was entirely satisfactory.

METHOD OF BACTERICIDAL TEST

Our method of determining the ability of the blood to destroy bacteria is based on the principle of Schottmueller,[11] Ruge [12] and Philipp,[13] which has been used previously by one of us for virulence tests and has now been adapted for our special purposes. It consists in planting a certain bacterial suspension into sterile defibrinated blood and using equal amounts of that blood at regular intervals for plating in agar dishes. We chose as test bacteria in all our cases *Staphylococcus aureus* and in a certain number also *Bacillus coli* and a hemolytic streptococcus. A twenty-four hour growth on a slant is washed off in 10 cc. of physiologic sodium chloride solution, and one loopful of this suspension carried over into 10 cc. of broth and incubated for twenty-four hours. A 1:8,000 dilution of this growth is made in physiologic sodium chloride solution and 0.075 cc. planted in 2 cc. of defibrinated blood. After thorough mixing, 0.1 cc. is plated immediately, the rest being incubated and 0.1 cc. plated again at hourly intervals for twelve hours. After twenty-four hours the colonies developed on the different plates are counted, the percentages of the numbers figured out and the bactericidal curve plotted. When this suspension is used, the number of colonies on the first plate varies between 40 and 200, but ordinarily stays around 100. If one checks these results at the same time with two different suspensions of no greater difference than the one described, the percentage curves run close together. But in order to be able to compare two curves accurately, any first plates showing a greater difference in number than 100 per cent were discarded. The accuracy of this method consists in getting a complete curve of bacterial destruction and growth in a blood specimen. Chart 1 shows sample curves obtained by this method, and our interpretation of the quality of the bactericidal curve given to each.

The hemobactericidal test described recently by Wright, Colebrook and Storer [14] consists in an implantation of a bacterial suspension in a shallow chamber filled with the defibrinated blood to be tested. The colonies developing within twenty-four to forty-eight hours are counted and compared with the number grown on agar. The objection to this method is that the number of colonies developed in the one implantation does not permit an exact judgment on the number of bacteria grown in the blood, each colony being formed by millions of bacteria. Furthermore, the blood in the shallow cells is disintegrated before the end of a day according to our hourly controlled curves. Therefore, it is difficult to attribute positively the check in the growth of colonies on that medium within two days to an active vital bactericidal and phagocytic action of the blood.

The results of our bactericidal tests after ultraviolet irradiation are given in the accompanying table, and the comparison of sample curves occurring before and after irradiation are given in chart 2.

11. Schottmueller and Barfurth: Beitr. z. Klin. d. Infektionskr. **2**: 291, 1914.
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The table shows that the action of ultraviolet irradiation did not have any beneficial effect on the bactericidal property of the blood in the majority of our cases. Among the thirty cases tested only ten showed improved bactericidal action, while twenty gave more or less unfavorable changes. We attempted to clear up this surprising outcome by analyzing it from different points of view. It seems probable that the kind of reaction depends on the physiopathologic condition of the child. A normal child ought to respond differently to actinic irritation from an organism engaged in fighting an infection, and although our material is too small to permit a definite decision in this direction, we are able to show some suggestive evidence of this being true by dividing up our cases according to diagnosis. In seven completely normal cases, five showed improved bactericidal reaction and only two appeared worse. On the other hand, in fifteen patients convalescent at varying

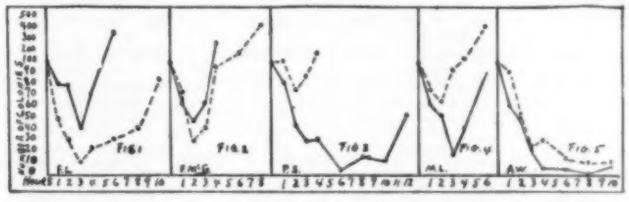

Chart 2.—Illustrative curves showing the comparison of bactericidal curves before (in solid line) and after (in broken line) irradiation. The change in the bactericidal curve after irradiation is interpreted as showing moderate improvement in figure 1, slight improvement in figure 2, marked reduction in figure 3, moderate reduction in figure 4 and slight reduction in figure 5.

intervals after acute poliomyelitis, thirteen of them showed unfavorable bactericidal reaction after ultraviolet treatment and only two some improvement. Among three convalescents after acute osteomyelitis, two showed a favorable and one an unfavorable reaction. Three patients with various infections, one tuberculous, all gave unfavorable results. One case of rickets showed improvement, and one, in which the clinical response to light treatment was slow, showed also reduced bactericidal power.

There was no indication that the pigment of the skin or the hair plays an important part as far as the bactericidal action is concerned. Although we had to arrange our dosage according to the susceptibility of the skin in different individuals, there did not seem to be an essential difference between blonds and brunets.

Another method of analysis concerns the number of days of irradiation. We find that among eight children treated more than thirty days, seven showed reduced bactericidal property and only one, with rickets, improvement; while in twenty-two treated four weeks or less there were favorable results in nine. This fact seems to indicate that a prolonged irradiation leads to some kind of exhaustion of the bactericidal properties of the organism. In order to find out whether or not that property is restored after a certain period of rest, we repeated the test in five cases from seven to eleven days later. In four of them there was a definite improvement after that interval.

In contrast to the unfavorable turn in the bactericidal function in children, the three rabbits all showed an extraordinary improvement after four weeks of irradiation with the dosage described. This was even more marked than in the most favorable cases in human beings. Colebrook, Eidinow and Hill have already reported similar experiences. They found that men

show a much less degree of increase in hemobactericidal power after irradiation than rabbits and pigs. Therefore, we are not able to compare animals with man in the matter of the effect of ultraviolet rays on the bactericidal property of the blood.

Another important aspect of the results of our experiment concerns the amount of change in the bactericidal property before and after a course of radiation. In the ten cases showing an improved bactericidal curve, only one showed marked improvement, five moderate improvement and four slight improvement. In the twenty cases showing a reduced bactericidal curve, six showed marked reduction, seven moderate reduction and seven slight reduction. In other words, the more marked change in the bactericidal curve occurred in those having a reduced bactericidal curve.

So far, the result of the entire investigation appears to be in contradiction to the general opinion about the action of ultraviolet rays on the resistance and immunity of the body. There are reports in the literature about the undesirable effects of natural and artificial radiation and particularly of an overdosage on the clinical picture. The danger of overdosage in tuberculosis has been stressed repeatedly (Pottenger,[15] Lo Grasso,[16] von Hajek,[17] Mayer,[18] Watson[19]), yet in other kinds of infectious conditions there are more or less vague ideas prevailing on the indication, contraindication and dosage of sun and artificial light therapy. Wickline,[20] in a paper on the effect of tropical climate on the white race, gives as a typical sign of chronic overinsolation a drop in the polymorphonuclear cells and a rise in the lympho-

Effect of Ultraviolet Rays on Bactericidal Property of Blood

Name	Diagnosis	Duration of Irradiation	Test Bacteria	General Condition of Individual Tested	Quality of Bactericidal Curve before Irradiation	Change in Bactericidal Curve after Irradiation
A. E.	Deafmute	28 days	Staphylococcus and colon bacillus	Stationary, favorable	Poor	Moderate improvement to fair
M. R.	Postpoliomyelitis deformity	80 days	Staphylococcus and colon bacillus	Decidedly improved	Fair	Moderate reduction to poor
A. W.	Postpoliomyelitis deformity	30 days	Staphylococcus and colon bacillus	Stationary	Excellent	Slight reduction, remaining excellent
G. R.	Postpoliomyelitis deformity	23 days	Staphylococcus	Stationary	Good	Slight reduction, remaining good
F. J.	Postpoliomyelitis	19 days	Staphylococcus and streptococcus	Stationary	Fair	Slight reduction, remaining fair
M. D.	Postpoliomyelitis deformity	19 days	Staphylococcus and streptococcus	Stationary	Very poor	Slight reduction, remaining very poor
S. S.	Congenital malformation	23 days	Staphylococcus and streptococcus	Stationary	Poor	Moderate improvement to fair
M. S.	Congenital malformation	21 days	Staphylococcus and streptococcus	Stationary	Fair	Moderate improvement to good
C. O.	Postpoliomyelitis deformity	21 days	Staphylococcus and streptococcus	Stationary	Poor	Moderate reduction to very poor
E. W.	Enuresis	19 days	Staphylococcus and streptococcus	Stationary	Fair	Moderate improvement to fair-good
W. C.	Postpoliomyelitis	49 days	Staphylococcus	Improved	Fair	Moderate reduction to very poor
A. W.	Healed osteomyelitis	27 days	Staphylococcus	Stationary	Poor	Very slight improvement, remaining poor
E. H.	Nontuberculous pleurisy	21 days	Staphylococcus	Stationary	Very poor	Slight reduction, remaining very poor
E. K.	Chronic ethmoiditis, conjunctivitis	45 days	Staphylococcus and streptococcus	Stationary	Good	Marked reduction to poor
F. L.	Healing osteomyelitis	17 days	Staphylococcus and colon bacillus	Improved	Poor	Moderate improvement to good-fair
H. B.	Healing osteomyelitis	14 days	Staphylococcus and colon bacillus	Worse	Excellent	Marked reduction to poor-fair
W. C.	Postpoliomyelitis deformity	14 days	Staphylococcus and colon bacillus	Stationary	Good	Moderate reduction to fair
F. M.	Tuberculous spine	22 days	Staphylococcus and colon bacillus	Decidedly improved	Fair-good	Very slight reduction, remaining fair-good
V. M.	Active rickets	51 days	Staphylococcus and colon bacillus	Decidedly improved	Excellent	Slight improvement, remaining excellent
J. B.	Active rickets	21 days	Staphylococcus and colon bacillus	Stationary	Good	Marked reduction to poor
M. L.	Postpoliomyelitis deformity	75 days	Staphylococcus and colon bacillus	Somewhat improved	Fair	Moderate reduction to poor
Same	Postpoliomyelitis deformity	9 days after irradiation discontinued	Streptococcus and staphylococcus	.....	Improved, but still poor	Slight improvement
P. S.	Postpoliomyelitis deformity	52 days	Staphylococcus	Moderately improved	Good, excellent	Marked reduction to very poor
Same	Postpoliomyelitis deformity	11 days after irradiation discontinued	Staphylococcus	.....	Very poor, improved to good	Marked improvement
H. M.	Congenital deformities	19 days	Staphylococcus	Stationary	Fair-good	Marked reduction to poor
Same	Congenital deformities	11 days after irradiation discontinued	Staphylococcus	.....	Poor, improved but still poor	Slight improvement
J. T.	Postpoliomyelitis deformity	20 days	Staphylococcus	Stationary	Fair-good	Moderate reduction to poor
Same	Postpoliomyelitis deformity	7 days after irradiation discontinued	Staphylococcus	.....	Poor, reduced to very poor	Moderate reduction
F. Mc	Postpoliomyelitis deformity	18 days	Staphylococcus	Stationary	Poor	Slight improvement, remaining poor
Same	Postpoliomyelitis deformity	7 days after irradiation discontinued	Staphylococcus	.....	Poor, improved to fair-poor	Slight improvement
B. B.	Congenital deformity	16 days	Staphylococcus	Stationary	Fair	Marked reduction to very poor
N. S.	Feebleminded	16 days	Staphylococcus	Stationary	Poor-fair	Marked improvement to good-excellent
I. M.	Old poliomyelitis	16 days	Staphylococcus	Stationary	Fair	Moderate reduction to very poor
I. S.	Old poliomyelitis	15 days	Staphylococcus	Stationary	Poor-very poor	Slight reduction to very poor
H. D.	Old poliomyelitis	17 days	Staphylococcus	Stationary	Very poor	Slight improvement to poor

15. Pottenger, F. W.: Clinical Tuberculosis, St. Louis, 1917.
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20. Wickline: Mill. Surgeon **23**: 282, 1908.

cytes, signifying an increased susceptibility to bacterial invasion. Davenport [21] finds that light of different intensities and different lengths of application produces diverse and even opposing effects on growth. Bovie and Hughes,[22] studying the effect of irradiation on cell division in paramecia, find that irradiation over a short period of time has a stimulating action while with longer periods an injurious effect occurs.

The fact we have established is that the daily quartz lamp treatment over a period from two to eleven weeks (avoiding any marked erythema, general, febrile or focal reaction) does not as a rule improve, but instead

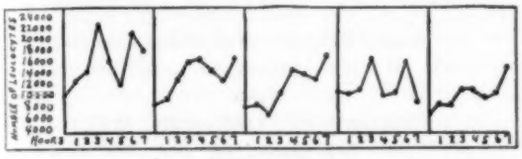

Chart 3.—Illustrative curves showing the variation in the hourly leukocytic count in different individuals after the first exposure to ultraviolet rays.

lowers, the destroying power of the blood for certain test bacteria. In searching for an explanation of this result, our attention has been directed to the influence of irradiation on the changes in the absolute and differential count in the white cells, the chief elements of the blood in charge of bacterial destruction. We did not attempt to look for a parallel between the bactericidal test and the phagocytic index per hundred leukocytes, as this has already been ruled out by the work of Maitland,[23] who found that even in the presence of a definite improved bactericidal property of the blood the phagocytosis per hundred cells is unchanged, or even diminished, and also that the serum alone permits the growth of staphylococci just as well as or even better than bouillon. Maitland's work seems to prove that, as far as cocci for bactericidal tests are concerned, the number of phagocytes is the decisive factor.

Confirmation of this theory has been offered recently by Fleming.[24] He shows, by filtering the leukocytes from blood and making various dilutions of them in different specimens of the same blood, that the bactericidal property depends on nothing but the number of phagocytes, as far as the same blood is concerned.

The leukocytic reaction under the action of light has been studied extensively. Among the large number of publications on that matter, we have to dispense with many vague statements on the temporary increase of neutrophils and lymphocytes. Aschenheim and Meyer [25] do not find any increase in the polymorphonuclear cells after irradiation, but Gelera [26] does. Miles and Laurens [27] show that with heavy ultraviolet irradiations in dogs there is first an increase followed by a drop below normal in the neutrophils. A most thorough investigation in this matter was carried out by J. H. Clark.[28] She shows that the far ultraviolet rays, shorter than 3,000 angstrom units, result solely in a great increase of lymphocytes with the polymorphonuclears remaining constant, while the near ultraviolet rays just below the visible portion of the spectrum have a depressing effect on the lymphocytes, but give rise to an increase of short duration in neutrophils, which is followed by a decrease below normal.

Our own studies on the leukocytes after exposure to our quartz lamp shows a marked fluctuation in the count taken at hourly intervals. Not only does the total white count fluctuate a great deal in any individual after exposure to ultraviolet rays, but the fluctuation varies in different individuals and even in the same individual after repeated exposures to the light. The marked variation in different individuals after the first irradiation is well shown by the curves in chart 3.

In the majority of the cases, differential counts made at the seventh hour after irradiation showed a relative and absolute increase in the polymorphonuclears and a relative and sometimes absolute decrease in the mononuclear cells. By the end of twenty-four hours, the total and differential counts return to the same level as had existed before the first exposure.

With the work of Maitland and Fleming in mind, we anticipated an improvement in the bactericidal property of the blood taken at the height of leukocytosis. This we found actually to be the result in the majority of cases. Out of twenty-six cases showing an increase in leukocytes of from 14 to 111 per cent at the seventh hour after irradiation, a time arbitrarily set for the comparison because of the majority of cases showing the greatest leukocytosis at this time, nineteen showed an improved bactericidal property of the blood. Out of seventeen cases showing a leukocytosis of 25 per cent or greater, fourteen showed an improvement; of the other three, two remained the same, one of these being excellent to start with, and one became slightly worse after irradiation. Of these fourteen improved cases, nine showed marked improvement, four moderate improvement and one slight improvement in the bactericidal curve. The graphic representation of this improvement is shown in chart 4.

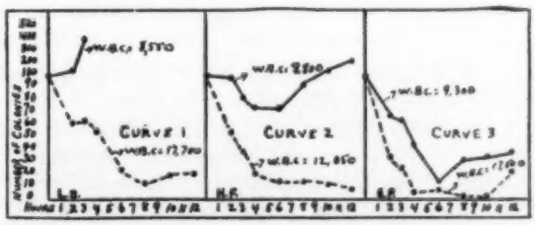

Chart 4.—Illustrative curves showing the comparison of bactericidal curves before (in solid line) and seven hours after (in broken line) irradiation. The leukocyte counts taken at the time of the withdrawal of the blood are indicated on the curves. The change in the bactericidal curve seven hours after irradiation is interpreted as showing marked improvement in curve 1, moderate improvement in curve 2, and slight improvement in curve 3.

From these results it will appear that the bactericidal property of the blood, as determined by our method, has a direct relationship to the number and character of the leukocytes contained in the blood. Certainly, as far as the immediate effect of ultraviolet irradiation on the bactericidal property is concerned, such a relationship seems to exist.

Whether or not the lowered bactericidal property occurring in the majority of cases after prolonged ultraviolet irradiation is due to the effect on the leukocytes is a matter on which we are still working. We have, however, some evidence to show that the explanation is to be found in one or both of two facts: the decrease in the number of leukocytes and the loss of the ability

21. Davenport, C. B.: Experimental Morphology, 1908.
22. Bovie, W. F., and Hughes, D. M.: The Effects of Quartz Ultraviolet Light on the Rate of Division of Paramecium Caudatum, J. M. Research **39**: 223, 1918.
23. Maitland, H. B.: On the Mechanism of the Bactericidal Power of Blood in Slide-Cells, Brit. J. Exper. Path. **7**: 161 (Aug.) 1926.
24. Fleming, A.: A Simple Method of Removing Leukocytes from Blood, Brit. J. Exper. Path. **7**: 281 (Oct.) 1926.
25. Aschenheim, E., and Meyer, S.: Ztschr. f. exper. path. u. Therap. **22**: 22, 1921.
26. Gelera, M.: Gazz. d. osp. **43**: 349, 1923.
27. Miles, A. L., and Laurens, H.: Am. J. Physiol. **75**: 443 (Jan.) 1926.
28. Clark, J. H.: The Action of Light on the Leukocyte Count, Am. J. Hyg. **1**: 39 (Jan.) 1921.

to react by leukocytosis after continued irradiation. For example, chart 5 shows the leukocytic reaction before and after two weeks of daily irradiation in an individual whose bactericidal curve had become reduced during the two weeks of daily irradiation.

On the other hand, we have patients showing an improved bactericidal property after two weeks' treatment, whose number of white blood cells has gradually risen during the treatment and whose response by leukocytosis to the last exposure is just as great and greater than the first exposure. The leukocytic reaction of such an individual is shown in chart 6. However, our number of cases in regard to this aspect of the matter is too small to enable us to offer any conclusive evidence, but we hope to be able to complete our evidence in the near future.

SUMMARY AND CONCLUSIONS

1. The biologic action of ultraviolet rays on immunity may best be studied independently from other physical factors, by the use of artificial instead of solar radiation.

2. The killing power of blood in vitro for certain test bacteria before and after general irradiation affords one criterion for the changes in the antibacterial properties that have taken place in the body.

3. Continuous daily quartz lamp irradiations for more than four weeks with routine exposure time and distance lead, in the majority of all cases examined, to a lowered bactericidal property of the blood.

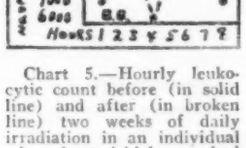

Chart 5.—Hourly leukocytic count before (in solid line) and after (in broken line) two weeks of daily irradiation in an individual whose bactericidal curve had become reduced during the two weeks of daily irradiation.

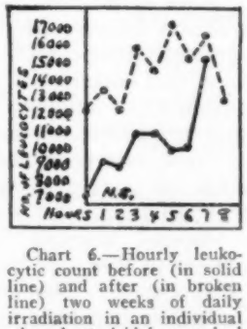

Chart 6.—Hourly leukocytic count before (in solid line) and after (in broken line) two weeks of daily irradiation in an individual whose bactericidal curve had become improved during the two weeks of daily irradiation.

4. Completely normal persons free from any infection are apt to show improved bactericidal properties after continuous ultraviolet irradiations; those suffering from chronic infections and postinfectious conditions after daily quartz lamp treatments are apt to show a drop in the bactericidal property of the blood.

5. Normal rabbits tested show in all cases a very favorable response to daily ultraviolet irradiation.

6. The increased or reduced bactericidal property of the blood after ultraviolet irradiation seems to depend largely on the leukocytic reaction of the body. An increased number of white cells, especially of polymorphonuclears, is associated with improved killing power for cocci; a leukopenia is associated with a lowered killing power for cocci.

7. A comparison between the number of leukocytes and the bactericidal property of the blood can be made in the same individual only at different times. Two different individuals may show the same numbers of leukocytes and the opposite antibacterial response. Therefore, we have to assume a comparatively high constancy in the antibacterial function of the single white cell in one individual, but differences in the leukocytic ability of different individuals.

8. In the matter of treatment, the response of the organism should be controlled by the bactericidal test or at least by the leukocytic reaction of the blood. This white blood count should not be made immediately, but instead twenty-four hours after a light treatment and not less than once a week.

9. The borderline between the therapeutic and the toxic dose of ultraviolet rays with regard to immunity probably varies in each individual case.

END-RESULTS IN CONSERVATIVE AND RADICAL OVARIAN SURGERY

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The question of conservation of ovarian tissue when doing a hysterectomy versus total ablation is one that has interested gynecologists for many years. Recently, the evidence for conservative pelvic surgery has been accumulating at the expense of evidence for more radical disposition of ovarian tissue. However, if one is to judge by the reports from various clinics within the last decade, it is evident that opinion is still far from crystallized. In 1915, Vineberg[1] sent questionnaires to many members of the American Gynecological Society asking their opinion on the disposition of ovarian tissue when doing a hysterectomy. Although the majority were in favor of conserving ovarian tissue when feasible before the age of 45, there were some who reported that they made a practice of always removing the ovaries when performing a hysterectomy. Since then, reports have been made from various clinics throughout the country on the ultimate results in series of cases of both the radical and the conservative types of operation. The conclusions drawn from this statistical material have been varied.

In summarizing a follow-up study made in 1917 of 233 cases of total ablation and twenty-six cases of hysterectomy with conservation of ovarian tissue, Graves[2] said: "My experience impels me to the conclusion that the retention of ovaries after hysterectomy insures only slight improvement in the menopause symptoms over ablation, and that this slight advantage, even if it exists at all, does not compensate for the dangers of adhesions with cyst formation, malignant degeneration and physiological disturbances which the conservation of ovaries entails." Dewell Gann,[3] in 1924, concluded from a small series of forty-one cases of various types of ovarian operations that after the age of mental and physical maturity, ablation of diseased ovarian tissue might be practiced without fear of ill effect on the patient, and was to be preferred to conservation in a large majority of cases.

Clark and Norris,[4] in 1922, on the other hand, in making an analysis of 232 hysteromyomectomies, in 171 cases of which ovarian tissue was saved and in sixty-one total ablation was carried out, came to the conclusion that conserved ovaries rarely gave rise to trouble, and that excellent results could be obtained by performing hysteromyomectomy whether or not ovarian

1. Vineberg, H. N.: Tr. Am. Gynec. Soc. **40**: 59, 1915.
2. Graves, W. P.: Surg. Gynec. Obst. **25**: 315 (Sept.) 1917.
3. Gann, Dewell: South. M. J. **17**: 696 (Sept.) 1924.
4. Clark, J. G., and Norris, C.: Surg. Gynec. Obst. **34**: 509 (April) 1922.

conservation was practiced. Anspach [5] in 1924, in following up a series of eighty-five radical and eighty-five conservative cases, concluded that the conservation of ovarian tissue was of great value in pelvic surgery. From a review of the literature in 1918, E. H. Richardson [6] concluded that both the experimental and the clinical evidence strongly indicated a continuation of function of the ovaries following hysterectomy, and thus favored ovarian retention.

In view of the difference of opinion that still exists on this subject, we have thought it of value to follow up carefully a series of cases in which hysterectomy was done with and without conservation of ovarian tissue in the gynecologic clinic of the Johns Hopkins Hospital and compare our results with those reported from other clinics. It is only fair to state that the members of the gynecologic staff of this institution have for many years favored conservation of ovarian tissue when feasible. In collecting the data, however, an attempt was made to approach the question in an unprejudiced way, and in the majority of instances the physician interviewing and examining the patient was unaware of the exact nature of the previous operation. Our series consists of ninety-eight cases, in forty-six of which a hysterectomy had been done with the conservation of one or both ovaries, and in fifty-two of which hysterectomy with bilateral salpingo-oophorectomy had been performed. The operations were done in almost all cases for myomas, salpingitis, or both conditions. In collecting our data, we arranged to have each patient included in the series return to the clinic for a personal interview and an abdominal and pelvic examination. The greater part of the data in the literature has been compiled by means of questionnaires. We felt that data obtained from a somewhat smaller group of patients interviewed and examined personally would be of more value in enabling one to draw conclusions as to the ultimate anatomic and functional fate of the retained ovarian tissue than that from a larger series obtained by questionnaire. In this series of cases, from two to six years had elapsed between the time of operation and our interview.

COMPARISON OF CASES OF RETENTION AND ABLATION FROM AN ANATOMICOCLINICAL POINT OF VIEW

What is the ultimate fate of the ovaries retained after hysterectomy? On investigating the literature on this point, one finds relatively few reports of cystic ovaries requiring operative removal following hysterectomy. In 1915, Vineberg collected reports of twenty-seven cases from the literature in which a second operation was done for removal of cystic ovaries. Graves reports one case of operative removal of a painful cystic ovary one year after hysterectomy for pelvic inflammatory disease, another case of painful cystic ovary requiring removal following hysterectomy for a "sclerotic uterus," and a third case of malignant papilloma of the ovary following hysterectomy. The collection of these isolated cases in the literature gives us little idea as to the frequency of the occurrence of this condition in terms of percentage, although the paucity of cases reported might indicate that the occurrence is not frequent.

Of the forty-six cases in this series in which one or both ovaries were left in situ when hysterectomy was performed, there were seven in which the ovary was palpably enlarged on pelvic examination. The average enlargement in these seven cases was to about twice the size of a normal ovary. The largest cystic ovary found was estimated at about 10 cm. in diameter. Of the seven patients with enlarged retained ovaries, only four complained of abdominal discomfort which may have been attributable to the enlarged ovary. The other three did not have any abdominal discomfort and did not complain of tenderness on pelvic examination. The largest cyst, 10 cm. in diameter, was quite free from tenderness and the patient was unconscious of its presence.

In comparing the conservative with the radical group as to abdominal discomfort, there is little difference in the ultimate result. Of the patients in whom total ablation was done, 88 per cent were absolutely free from pain and 12 per cent were improved, while of those in whom ovarian tissue was saved, 84.4 per cent were free from pain and 15.6 per cent were improved. Of the four patients with abdominal discomfort which may have been attributable to retained ovarian tissue, none had sufficient discomfort to be willing to undergo a second operation to rid themselves of it. Comparing our results on this point with those of others reported in the literature, we find that Dickinson,[7] in a series of 200 cases in which ovarian tissue was conserved, did not have to reopen a single abdomen. Clark and Norris found that in 261 cases in which the ovaries had been conserved, subsequent removal was not required in a single case. These facts, together with the paucity of isolated cases reported in the literature, quite surely indicate that the occurrence of postoperative cystic ovaries requiring surgical removal is relatively rare.

The fate of retained ovarian tissue following hysterectomy has been studied experimentally. This has been done chiefly with the end in view of determining the effect of hysterectomy on the function of the ovary. The only criteria for judging the function of the retained ovary in experimental animals have been the anatomic and histologic changes in the ovary. The value of the results of these experiments to our physiologic knowledge will be considered later in the paper. Suffice it to say here that no anatomic changes have been found which would be responsible for enlargement of the ovary and thus give rise to clinical symptoms.

It is a noteworthy fact that in our series of fibroids without accompanying salpingitis in which supravaginal hysterectomy was done, leaving both tubes and ovaries in situ, not a single case of enlarged cystic ovaries developed, as ascertained by pelvic examination. This fact brings up two important points in connection with ovarian surgery: (1) the possibility of salpingectomy being a factor in the formation of cystic ovaries with especial reference to the blood supply of the ovary, and (2) the presence of inflammation as a factor in the formation of cystic ovaries. The importance of the preservation of an adequate arterial blood supply to and venous drainage from the retained ovary has long been stressed by Sampson, Keitler, Wert, Olshausen and Polak. When a hysterectomy is performed, the blood supply to the ovary from the uterine anastomosis is cut off. There remain, however, the large ovarian artery and veins which, judging from their size, ought to take care of the arterial supply and venous drainage adequately. If, however, in doing a salpingectomy there is further interference with the blood supply, the ovary might suffer. In case the tube which is to be removed deviates very little from the

5. Anspach, B. M.: Atlantic M. J. **27**: 625 (July) 1924.
6. Richardson, E. H.: Surg. Gynec. Obst. **28**: 146 (Feb.) 1919.
7. Dickinson: Surg. Gynec. Obst. **14**: 134, 1912.

normal and the operator, in removing it, places his clamps very close to the tube, it is unlikely that the procedure of salpingectomy would interfere with the ovarian circulation. If, however, as is often the case, the normal anatomic arrangement is greatly distorted by the presence of a grossly diseased tube, such as a large pyosalpinx with the possibility of thromboses of the vessels in its vicinity, it is much more difficult to remove the tube and leave an ovary in situ with an adequate blood supply. The fact that in this series none of the ovaries became cystic in the group of cases uncomplicated by salpingitis, in which hysterectomy was done leaving the tubes and ovaries in situ, would seem to indicate that the presence of inflammation or the fact that salpingectomy was done or both these factors are, at least in a measure, responsible for the formation of cystic ovaries. Certainly it can be said that the results in this series do not give any evidence in support of total ablation when hysterectomy is necessary when the tubes and ovaries are normal; and, further, that unless there is a good pathologic reason, the tubes are best left in situ with the ovaries when a hysterectomy is done.

COMPARISON OF CASES OF RETENTION AND ABLATION FROM A PHYSIOLOGICOCLINICAL POINT OF VIEW

We have made this comparison by considering the symptoms developed by the patients following operation. The data were obtained by carefully questioning the patients as to symptoms developing in the various systems. In both groups of cases, the symptoms which had developed were chiefly referable to the nervous system. The classic hot flushes were the most frequent of all symptoms, but occasionally cases were encountered in which flushes were absent and yet other definite symptoms had developed since the operation. This is mentioned simply to emphasize the fact that the presence or absence of hot flushes alone is not a safe criterion as to the postoperative symptomatology. As a rule, the flushes began a few weeks after operation and continued with considerable severity during the first year. After this they gradually diminished in severity and frequency, but in the majority of cases they were still present two or three years after operation. In a few cases in which six years had elapsed since operation, hot flushes were still present. The flushes were characteristically more severe at night, frequently keeping the patient awake by their occurrence every few minutes. Several cases were noted in which the flushes occurred only at monthly intervals. These were among the cases of total ablation as well as those in which ovarian tissue had been saved.

Hot flushes were present in 74 per cent of the cases in which total ablation had been done, and in 47 per cent of the cases in which hysterectomy was done with conservation of ovarian tissue. It is interesting to note that the latter figure is practically the same as that obtained by Cullen in 1909 when, after following up fifty-six patients in whom hysteromyomectomy had been performed with conservation of ovarian tissue, he found that hot flushes occurred in 45 per cent. Judged from this point of view the evidence is distinctly in favor of ovarian conservation, but the evidence is even greater than is indicated numerically. It was evident in collecting the data that the severity of the flushes was much more marked in the cases in which total ablation was carried out than in the cases in which ovarian tissue was conserved. The severity of the flushes can best be ascertained by a personal interview with the patient. Whereas the patient with an occasional slight flush and the one with frequent severe flushes would both answer a questionnaire in the affirmative when asked concerning this symptom, it is only by personal interview with the patient that the great distress of the more severe cases can be properly conveyed to the examiner. This greater severity of the flushes in the radical group was very striking.

That the uterus depends on the corpus luteum of the ovary for regulation of the cyclic endometrial changes is an established fact. That the ovary is dependent on the endometrium for its proper function is an unproved hypothesis suggested by certain observers. Experimentally, the subject has been attacked with varying conclusions. Grammatikati[8] performed hysterectomies in rabbits and found that after an interval of from three to four months microscopic examination of the ovaries showed them to be normal in every detail. Mandl and Buerger[9] performed hysterectomy on rabbits and apes, allowed from eight months to three years to elapse, and then examined the ovaries histologically. They found numerous follicles in various stages of development and retrogression up to the formation of typical corpora lutea. The number of primordial follicles was less than that found in control animals. In addition, they found an effusion of blood into the larger follicles with cystic degeneration of some, and decided that there was evidence of a certain degree of atrophy of the entire organ. They concluded from this histologic evidence that possibly the changes noted interfered slightly with the function. It has been possible to carry out the same experiments on women in a limited number of cases. For instance, Glaevecke[10] operated on two women six months after hysterectomy and found the ovaries normal in both. Vineberg removed one of two normal looking ovaries sixteen months after hysterectomy and found it normal microscopically. Grammatikati examined the ovaries of a woman who died three years after a panhysterectomy for cancer and did not find evidence of degeneration. We realize that to judge the physiologic activity of an organ from its histology is a somewhat risky procedure, and yet bearing this in mind it can certainly be said that there is very little experimental evidence to indicate that hysterectomy interferes with continued ovarian function.

There is, however, some clinical evidence that ovarian function is to a certain degree influenced by the presence of the uterus. I refer to the development of symptoms in hysterectomized women, particularly hot flushes, which were present in 47 per cent of the retention cases. Although these were less frequent and less severe than those occurring in cases in which there had been total ablation, their occurrence is suggestive of some temporary disturbance of the utero-ovarian balance. Their presence has led some authors to the conclusion that the uterus is essential to the continued function of the ovary and, as a result of this belief, they have advocated removal of the ovaries when a hysterectomy is done. That hysterectomy, however, does not bring about a permanent loss of function of the ovary is indicated clinically by three patients in

8. Grammatikati, J.: Zentralbl. f. Gynäk. **13**: 105, 1889.
9. Mandl and Buerger: Die biologische Bedeutung der Eierstaecke nach Entfermung der Gebaermutter, Leipzig und Vienna, F. Deuticke, 1904.
10. Glaevecke: Arch. f. Gynäk. **35**: 1, 1889.

this series in whom ovarian tissue was saved. All three went through the period immediately after operation without symptoms. One, two and three years after the operations, at the respective ages of 42, 47 and 45, they all developed hot flushes and other symptoms suggestive of the cessation of ovarian function at the usual menopausal age.

The symptom next in frequency to flushes was headache. This was usually very severe, and was most often described as "in the top of the head." Often there was a sense of pressure there and a feeling as if "the top of the head would blow off." The headaches were sometimes synchronous with the flushes, but some were entirely independent of them. Other frequent symptoms were dizziness (usually associated with flushes), insomnia, irritability, palpitation, emotional instability, excessive sweating and cold hands and feet.

There were three patients in the series who developed outspoken psychoses following operation. In all three of these, hysterectomy and double salpingo-oophorectomy had been done. All were very much depressed and unstable emotionally, one having marked suicidal tendencies. Their ages were 36, 40 and 42. It is noteworthy that two of the three were in the fifth decade, a period when many gynecologists believe that total ablation can be done with impunity. To us, however, the occurrence of these severe cases would seem to indicate that, even in the fifth decade, ovarian tissue is not to be sacrificed without a good pathologic reason.

Sexual Function

	Hysterectomy	
	Double Salpingo-Oophorectomy 47 Cases	Ovarian Tissue Saved 46 Cases
Increased	6.4%	5.0%
Good as before	51.0%	60.9%
Poor as before	2.0%	12.2%
Unchanged	53.0%	73.1%
Decreased	40.4%	22.0%
	CASES, 20-29 YEARS	
	6 cases	7 cases
Good as before	1 case	5 cases
Decreased	5 cases	2 cases

The cases in both the conservative and the radical groups were also studied from the point of view of sexual function. The results are given in the accompanying table. It is to be noted that in a small percentage (5 and 6.4) in each series there was an improvement in the sexual function. This is probably explained in most instances on the basis of a relief from dyspareunia resulting from the removal of diseased pelvic organs. The sexual function remained unchanged in 53 per cent of the radical group, and in 73.1 per cent of the cases in which ovarian tissue was saved. There was a decrease in the sexual function in 40.4 per cent of the cases in which there had been ablation, in contrast to 22 per cent in the cases in which there had been a conservative operation. Thus, it is apparent from a perusal of these figures that from the standpoint of the sex function the patients treated conservatively suffered less than those in whom a complete operation was done. It is worthy of note, however, that, in 51 per cent of the cases in which all ovarian tissue was removed, the sexual function remained as good as before the operation. If we consider the younger patients in the two groups, the difference is more striking. In seven between 20 and 29 years of age, ovarian tissue was conserved. In five of these the sexual function remained as good as before, and in two there was a decrease. Total ablation was done in six patients between 20 and 29. In only one of these did the sexual function remain as good as before, whereas in five there was a marked decrease. If we may draw conclusions from this limited number of cases, it would seem that the removal of all ovarian tissue in younger individuals has a tendency to decrease the sexual desire and gratification to a greater degree than later in life.

The effect of the removal of ovarian tissue on the general metabolism has been studied by King.[11] We wish to mention only one fact brought out in our study which we believe is confirmatory of his observations. There is a prevalent idea in the minds of the profession that complete removal of ovarian tissue is followed by a substantial increase in the weight of the patient. In our series there was, to be sure, an increase in the weight of the patients; but the increase was practically identical in the cases in which ovarian tissue was conserved and in those in which all ovarian tissue had been sacrificed. In the former there was an average gain of 21 1/10 pounds, while in the latter the gain averaged 21 9/10 pounds. These observations are interesting in the light of the metabolic work done by King, who did not find any change from the normal in the metabolic rate in patients in whom all ovarian tissue had been removed.

CONCLUSIONS

1. From a review of the literature and from a clinical study of the cases of this series, we believe that there is strong evidence for the advisability of conserving ovarian tissue whenever possible when doing a hysterectomy.

2. A small percentage of retained ovaries become cystic. In no case in this series, however, in which both normal tubes and ovaries were left in situ, did this occur. Of the retained ovaries which subsequently became cystic, only part gave rise to symptoms, and in no case in this series were the symptoms severe enough to necessitate a second operation.

3. The percentage of patients free from abdominal discomfort was slightly greater in those in whom ablation was done (88 per cent) than in those in whom the ovarian tissue was conserved (84.4 per cent).

4. When considered from a physiologicoclinical point of view as judged by the presence of nervous symptoms, particularly hot flushes, the results in the conservative cases were considerably better than in the radical group. In two cases the most severe nervous symptoms occurred in the fifth decade, indicating that even at this age conservation is preferable.

5. The results as to sexual function were better in the patients treated conservatively, particularly in the younger individuals.

6. The gain in weight following hysterectomy with conservation of ovarian tissue was practically the same as after complete ablation.

1107 Saint Paul Street.

11. King, J. T., Jr.: Bull. Johns Hopkins Hosp. **39**: 281 (Nov.) 1926.

Fatigue Dependent on Metabolism.—Two processes of cellular life are thus continually carried on in the living body: assimilation, or building up, known as anabolism; disassimilation, or breaking down material into simpler chemical forms (ultimately expelled as waste products), known as catabolism. On these two processes together, or metabolism, life itself depends, and to this fundamental basis of life we must turn for an explanation of what fatigue is.—Goldmark: Fatigue and Efficiency, p. 12.

CHRONIC LEAD POISONING FROM SNUFF

REPORT OF THREE CASES

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NEW YORK

The occurrence of chronic lead poisoning from the use of snuff adulterated with lead is an unusual condition. It is well known that snuff may become contaminated with lead by contact with lead-containing wrappers, but in a search of the literature I found little mention of the practice of adulterating snuff with lead. In the past two years I have been able to prove the diagnosis of lead poisoning from this source in three cases. The snuff concerned came from the same manufacturer. Lead in the form of the chromate was added to color an inferior product.

It is remarkable that this particular brand of snuff is being sold to many persons and still no other cases have been reported in the literature. Abrahamson [1] states that several similar cases were presented to the New York Neurological Society in 1900. These cases were also traced to the same brand of snuff our patients used. Legal proceedings at that time were of no avail in the attempt to stop the sale of the snuff.

In view of the fact that I had my attention directed to snuff as the etiologic agent only in the most accidental manner, I conclude that there must be many more unrecognized cases of lead poisoning from this source. The difficulty in making a diagnosis of lead poisoning may be estimated from the fact that patient 3 had more than a hundred roentgen-ray examinations in various hospitals for suspected carcinoma of the stomach. At no time was this condition proved. Patient 1 was thoroughly investigated in one hospital, and on discharge the diagnosis was subacute intestinal obstruction with secondary anemia.

The diagnosis of chronic lead poisoning is not difficult if it is kept in mind in obscure cases of abdominal pain and muscular wasting. The following points are most important in establishing a diagnosis: [2]

1. Pallor.
2. Lead line on gingival margin.
3. Anemia.
4. Jaundice.
5. Basophilic stippling in red blood cells.
6. Abdominal colic; jejunal spasm.
7. Encephalopathy.
8. Polyneuritis affecting the radial (musculospiral) nerve especially, resulting in wrist drop but sparing the brachioradialis (supinator longus).
9. Optic neuritis.
10. Decreased fragility of red blood cells (Liebermann test [3]).
11. Identification of lead from the urine and stool.

The prognosis in chronic lead poisoning has been changed in recent years by the excellent work of Aub and others. They have shown in well controlled experiments that lead storage and excretion closely follow and are linked to the storage and excretion of calcium. On this fact as a basis, a definite and rational treatment of lead poisoning has been evolved. With a low calcium diet, ammonium chloride and sodium acid phosphate, and more recently parathyroid extract-Collip, it is possible to mobilize stored lead quickly and cause its excretion. As a result, the pathologic changes due to lead can be speedily checked and the prognosis in a previously unfavorable condition materially influenced.

The sale of this brand of snuff constitutes a menace to the health of a portion of the public addicted to the otherwise innocuous habit of snuff taking. Although snuff is only a very small part of the tobacco trade, it is still used extensively by a great many people. The habit is particularly prevalent among the former inhabitants of Russia and Poland, where the snuff trade occupies an important position in the commerce in luxuries.

REPORT OF CASES

CASE 1.[4]—*History.*—H. K., a man, aged 55, a Galician Jew, carpenter, was admitted to the Montefiore Hospital, March 25, 1925, complaining of loss of weight and constipation for nine months and tremor of the hands for two weeks. He had previously visited two other hospitals. In spite of the complaint of abdominal colic and constipation, and the presence of secondary anemia, blue lines on the gums, basophilic stippling and spastic colon, the condition had previously been considered subacute intestinal obstruction of unknown etiology. Although he was a carpenter, he did not use paints. His wife had had two abortions and two children, who were in good health. He had been a snuff taker for many years.

Gastric Analysis in Case 1

	Hydrochloric Acid	
	Free	Combined
Fasting contents	0	10
One hour meal	0	43

In the past nine months he had lost 20 pounds (9 Kg.) and had noticed an increasing constipation, relieved only by strong purgatives. He had frequent attacks of pain in the abdomen and occasionally vomited after meals. He had been getting pale for the past six weeks. In the past two weeks he noticed that his hands shook when he attempted to pick up an article.

Examination.—The patient showed evidence of general arteriosclerosis, with the heart enlarged to the left, accentuation of the second aortic sound, and a soft systolic murmur at the apex. The lungs and abdomen were normal. There was no emaciation. The patient had a blue-black line on the gingival margin, and secondary anemia was evident by the pallor of the skin. Neurologically, he had a right facial palsy, fibrillary twitchings, some atrophy of the muscles of the hand, bilateral wrist drop, and active reflexes. There were no sensory disorders and there was a normal response to galvanism and faradism. The bilateral extensor paralysis resulting in wrist drop spared the brachioradialis muscles.

A diagnosis of chronic lead poisoning was suspected after basophilic stippling had been found in a blood smear, and the snuff he was observed to use was examined and found to contain lead.

Laboratory Reports.—The urine was normal. Lead was not identified in the spinal fluid or in the excreta. The blood pressure was 124 systolic and 72 diastolic. Hemoglobin (Sahli) was 45 per cent; the red blood cells numbered 3,040,000. The erythrocytes in smear showed anisocytosis, poikilocytosis, ring body formation and basophilic stippling (1 per cent). The leukocyte count was 12,000 per cubic millimeter, with 70 per cent polymorphonuclear leukocytes, 26 per cent lymphocytes and 4 per cent mononuclear leukocytes. The blood urea nitrogen was 37.1 mg. per hundred cubic centimeters. The phenolsulphonphthalein dye excretion test was 65 per cent in two hours. The blood Wassermann reaction was negative. Roentgen-ray examination of the gastrointestinal tract and a barium enema were negative.

1. Abrahamson, Isador: Personal communication to the author.
2. Aub, J. C., and others: Lead Poisoning, Medicine **4**: 1 (Feb-May) 1925.
3. Orbán, Rudolph: Industrial Poisoning with Regard to Liebermann Test, Deutsche med. Wchnschr. **38**: 2079, 1912.
4. Reported through the courtesy of Dr. B. S. Oppenheimer from the medical service, Montefiore Hospital for Chronic Diseases.

The diagnosis was lead poisoning; general arteriosclerosis; cardiac hypertrophy; peripheral neuritis.

Treatment and Course.—Sodium thiosulphate, 1 Gm. every three days intravenously for eight injections, diluted phosphoric acid, physical therapy for the wrist condition, and a calcium-poor diet were given. The patient improved and was discharged, March 1, 1926, after almost one year in a hospital for chronic diseases, having been given a hopeless prognosis.

CASE 2.[5]—*History.*—I. G., a man, aged 58, Russian Jew, a rabbi, was admitted, Sept. 2, 1926, complaining of pallor and loss of weight for four months. He was addicted to the use of snuff for many years, but was not exposed to any other source of lead. In the last four months before admission he had lost 30 pounds (13.6 Kg.) and developed pallor of the skin. In the past month he had lost his appetite. He also complained of moderately severe abdominal cramps in the para-umbilical region, of diarrhea, of frequency of urination and of nocturia. In the week before admission he had gained 6 pounds (2.7 Kg.) and thought he had a better appetite than formerly.

Examination.—The patient had pallor of the skin with a yellowish cast, a subicteric tint to the sclerae, a metallic line on the gums, and a moderate arteriosclerosis in the peripheral vessels. The provisional diagnosis was carcinoma of the stomach, with primary anemia to be excluded.

Laboratory Reports.—The urine was essentially normal. The hemoglobin (Sahli) was 45 per cent. The red blood cells numbered 3,750,000, with a color index of 0.6. The leukocyte count was 16,200, with 86 per cent polymorphonuclear leukocytes, 10 per cent lymphocytes, and 4 per cent mononuclear leukocytes. The smear showed poikilocytosis, polychromatophilia and marked basophilic stippling. The blood pressure was 100 systolic and 70 diastolic.

An Ewald test meal was given. The fasting contents showed retention of much undigested food with a foul odor. Free hydrochloric acid was 2; combined hydrochloric acid, 54. There was no lactic acid, blood or Oppler-Boas bacilli present. Gastric ferments were present. One hour test meal was not recovered. The Rehfuss test showed almost absent free hydrochloric acid but a high combined hydrochloric acid of from 60 to 80 toward the end of the test. Lead was reported present in considerable amounts in the urine and in the snuff used by the patient. Roentgen-ray examination of the gastro-intestinal tract was negative.

Course.—While in the hospital he improved steadily although under no specific therapy, but the use of snuff was discontinued.

Two months later he was readmitted with bronchopneumonia. The anemia had improved markedly.

CASE 3.[6]—*History.*—I. S., a man, aged 40, Russian Jew, pedler, admitted, Feb. 15, 1927, complained of weakness and wasting of the arms and legs for six months. The patient had used snuff for many years and was not exposed to any other source of lead. Three years before he had had stomach trouble, characterized by loss of appetite, umbilical and hypogastric cramps and constipation. He had occasional episodes of diarrhea. He lost 80 pounds (36 Kg.) in a few months. In other hospitals, more than a hundred roentgen-ray examinations of the gastro-intestinal tract were negative for suspected carcinoma of the stomach, and the diagnosis of chronic colitis and anxiety neurosis was made. Six months before admission he was suddenly seized with severe lancinating pains in the extremities and a total weakness of all the extremities. The pain lasted two days, required morphine for relief, and gradually subsided. He had polyuria both day and night.

Examination.—The patient was cachectic and in an advanced state of muscular atrophy. All palpable vessels were thickened. The gums showed a metallic line on the gingival margin. There was bilateral wrist drop, with total paralysis of the extensors. The brachioradialis, although markedly atrophied, retained some power. Ophthalmologic examination showed the presence of vacuoles in the lens and an optic neuritis with hemorrhages and exudates. The arterial vessels had the brilliant reflex of angiosclerosis with hypertension.

Laboratory Reports.—The urine showed a low specific gravity and casts. Hemoglobin (Sahli) was 80 per cent; the red blood cells numbered 4,200,000; the leukocyte count was 9,600, with 84 per cent polymorphonuclear leukocytes, 14 per cent lymphocytes and 2 per cent mononuclear leukocytes. Basophilic stippling was present in the smear. The blood pressure was 192 systolic and 118 diastolic. The blood Wassermann reaction was negative.

The van den Bergh test, direct, gave a delayed slightly positive reaction; indirect, 0.6 mg. per hundred cubic centimeters, 1: 160,000.

An Ewald test meal was given. There were no fasting contents. One hour test meal revealed: free hydrochloric acid, 24 cc., combined hydrochloric acid, 47 cc. of tenth-normal hydrochloric acid per hundred cubic centimeters.

The Rehfuss test showed a high late rise in both free and combined hydrochloric acid; maximum free hydrochloric acid, 53, and combined hydrochloric acid, 80 in one and a half hours.

Electrical studies showed partial reaction of degeneration in the extensors of the arms and legs. There was reduction in faradic and galvanic response in the other muscles. Fragility test of the erythrocytes showed definite reduced fragility, hemolysis commencing at 0.420 per cent and complete at 0.360 per cent saline (Liebermann test).

Stools of the patient contained small amounts of lead, and the snuff used contained large amounts of lead. Qualitative, not quantitative, tests were made.

Chemical Examination of Blood in Case 3

Date	Urea Nitrogen	Total Nonprotein Nitrogen
2/18/27.....	25.0	57.7 mg. per 100 cc.
3/ 4/27.....	18.0	48.8 mg. per 100 cc.

Treatment and Course.—The patient was put on eliminative treatment consisting of ammonium chloride, 10 grains (0.65 Gm.) three times a day; sodium acid phosphate, 10 grains (0.65 Gm.) three times a day; potassium iodide, 20 grains (1.3 Gm.) three times a day; high caloric and low calcium diet (Aub).

Recently he has been put on parathyroid extract-Collip (from 20 to 65 units each day) in accordance with the most recent recommendation of Hunter and Aub.[7] Under this treatment he gained 30 pounds (13.6 Kg.) and his general condition was improved. He was able to walk and the power in his muscles has returned to a remarkable degree.

COMMENT

Lead poisoning is common in painters, typesetters, compositors, lacquerers and potters. Food poisoning by lead may occur through lead-containing utensils and preserve jars; more remotely through tin-foil used in wrapping tobacco and chocolate and through pipe water from lead-containing pipes.[8]

Snuff tobacco may contain lead from two sources: 1. Snuff wrapped in tin-foil containing a large portion of lead in its composition may cause lead poisoning if the contents become moistened by causing minute amounts of lead to pass into solution and become incorporated in the snuff. The continual inhalation of lead in small amounts will lead to chronic poisoning because of the cumulative nature of the poison and also because the respiratory tract is the most rapid source of the dissemination of lead, since it leads directly to the general circulation and avoids the detoxifying action of

5. Reported through the courtesy of Dr. Reuben Ottenberg from the First Medical Service, Mount Sinai Hospital.
6. Reported through the courtesy of Dr. Israel Strauss from the Neurological Service, Mount Sinai Hospital.

7. Hunter, D., and Aub, J. C.: Lead Studies: XV. Effect of Parathyroid Hormone on Excretion of Lead and of Calcium in Patients Suffering from Lead Poisoning, Quart. J. Med. **20**: 123 (Jan.) 1927.
8. Strumpell: Spezielle Pathologie und Therapie, ed. 18, **2**: 799, 1912.

the liver. Such a case causing fatal poisoning was reported by Stadler.[9] A certain specimen of snuff used by a woman was wrapped in metal foil containing 89 per cent lead, although the Swiss code of 1909 forbids the use of such foil when it contains more than 1 per cent of lead. The snuff when examined was moist and contained from 1.75 to 1.90 per cent of lead. This caused a fatal intoxication by habitual use. Zangger[10] states that the daily dose of from 8 to 10 mg. of lead causes chronic poisoning.

2. Lead may be an actual adulterant of snuff tobacco. It is used in the process of the manufacture of snuff as a coloring agent in the form of lead chromate.[11] In the cases reported, the snuff suspected and proved to contain lead was the most inexpensive of the available brands. This particular brand of snuff was the product of one manufacturer.

The literature is barren of any reference to extended analyses of various brands of snuff for heavy metals. The reason probably lies in the fact that the Food and Drugs Act is not considered to include snuff within its scope and therefore effort is not made to control the manufacture and prevent the adulteration of snuff. Authentic information is therefore lacking.

The board of health of New York, through the kindness of Dr. Harris, commissioner of health, has also been interested in this problem and has undertaken an extensive investigation into the occurrence of heavy metals in snuff. Mr. Thomson, director of the bureau of food and drugs, states that the brand suspected to have been responsible for the three cases reported was analyzed and found to contain lead, 3.24 per cent, but no antimony, mercury, zinc or arsenic.

In the process of manufacture, either a yellow or green coloring matter is added to the product. The sample of the yellow color was shown by chemical analysis to be lead chromate. The green color on analysis was reported to contain approximately 0.2 per cent of chromium oxide (Cr_2O_3) and 0.59 per cent of lead oxide (Pb O).

All the yellow and green coloring matter on the premises of the manufacturer have been embargoed and the manufacturers notified that in the future their snuff must be manufactured without the use of this particular yellow and green coloring. They claimed ignorance of the poisonous content of these preparations.

SUMMARY

Of three cases of chronic lead poisoning from the habitual use of snuff containing lead, two resulted in marked polyneuritis with bilateral wrist drop and extensive muscular atrophy; one resulted in marked secondary anemia. All three cases were chemically proved by the identification of lead from the snuff used by the three patients. Lead was also found in significant quantities in the excreta of two of the three patients. The continued sale of this snuff constitutes a menace to public health.[12]

1 East One Hundredth Street.

9. Stadler: Fatal Case of Lead Poisoning by the Continuous Use of Snuff Tobacco, Cor.-Bl. f. Schweiz. Aerzte, 1912, no. 5, in Schweiz. med. Wchnschr. **50:** 202, 1912 (Chemical Abstracts **6:** 2138).

10. Zangger, quoted by Stadler (footnote 9).

11. Allen: Commercial Organic Analysis, ed. 4, **6:** 250.

12. Since the completion of the paper, a fourth case of lead poisoning due to snuff has been observed in our wards.

The only references to adulterated snuff as a cause of lead poisoning that I was able to find were:

Wechsler: Textbook of Clinical Neurology, 1927, p. 229. Figure 56 is a photograph of the bilateral wrist palsy of case 1.

Bartel: Disease of the Kidney, in Ziemmssen's Cyclopedia of the Practice of Medicine, New York **15,** 1877.

DIPHTHERIA PROPHYLAXIS AMONG ASTHMATIC PATIENTS*

GEORGE L. WALDBOTT, M.D.
DETROIT

Because of the increased popularity of diphtheria immunization, physicians are quite frequently facing the question whether or not diphtheria toxin-antitoxin should be administered to asthmatic patients. Since the studies of Walker,[1] it has been generally recognized that animal serums can act as offensive proteins to allergic individuals and are liable to bring on their attacks. Furthermore, bacterial products, endotoxins as well as ectotoxins, are known as causative agents for asthma. Therefore, from a theoretical point of view at least, caution should be recommended in the administration of toxin-antitoxin to asthmatic patients.

The practical experience, however, as far as it is evidenced by the literature, does not seem to bear out this consideration. Bauer and Wilmer,[2] in their experience with about 100 asthmatic children whom they observed for more than five years, did not notice any adverse sequelae following toxin-antitoxin injections. Fifteen of these children who were previously sensitive to horse serum had no reaction whatever following the injections. Stewart[3] makes reference to seven children who had previously been immunized by toxin-antitoxin. He noticed grave reactions on reinjection with various other serums. So far as can be concluded from the description of the cases, these sequelae were different from asthma or any other allergic manifestation. They can be regarded rather as anaphylactic in type. Aside from these few observations, the literature on this problem is very meager and the attitude of the profession toward immunizing asthmatic persons is very uncertain, a fact that is also brought out by other authors.[4] Park,[5] who has supervised two million injections of toxin-antitoxin in New York, states that he was never able to observe any serious accidents, but he had seen several "quite annoying" reactions on account of which he does not recommend general diphtheria immunization among adults, unless the patient gives a negative Schick test. Duke[6] advises against injections of any serums to persons with asthma.

During the course of clinical studies on asthmatic patients, my attention was drawn to the fact that eight children who had been free from asthma for some time had to return to the clinic because of a severe relapse into the old asthmatic state. The following is a typical instance:

E. B., a girl, aged 9 years, had had severe bronchial asthma for six years, the attacks occurring as often as once or twice a week. Although the skin tests, which included horse serum and bacterial extracts, were repeatedly found negative, the case appeared to be of bacterial origin, since regularly an upper respiratory infection preceded the attacks. Tonsillectomy had previously been done, but there was a slight residue of tonsillar tissue. There also was evidence of chronic maxillary sinusitis. The history revealed allergy among other

* From the Asthma Clinic of the Children's Hospital of Michigan.

1. Walker, I. C.: Study 4: Studies on Sensitization on Patients with Bronchial Asthma, J. M. Research **35:** 487 (Jan.) 1917.

2. Bauer, E. L., and Wilmer, H. B.: Toxin-Antitoxin; Hypersensitivity to Its Protein Content, J. A. M. A. **86:** 942 (March 27) 1926.

3. Stewart, C. A.: Anaphylactic Reactions Following Administration of Serum to Children Previously Immunized Against Diphtheria, J. A. M. A. **86:** 113 (Jan. 9) 1926.

4. Toxin-Antitoxin and Asthma, Queries and Minor Notes, J. A. M. A. **86:** 1309 (April 24) 1926.

5. Park, W. H.: Use of Schick Test Before and After Injection of Toxin-Antitoxin, New York State J. Med. **26:** 347 (April) 1926.

6. Duke, W. W.: Allergy, Asthma, Hay-Fever and Allied Manifestations of Reaction, St. Louis, C. V. Mosby Company, 1926.

members of the family. The physical condition, the presence of eosinophilia, and the response to epinephrine confirmed the diagnosis of allergic asthma. Two roentgen-ray treatments[7] of the spleen, Dec. 6, 1925, and Jan. 26, 1926, controlled the attacks entirely. The child received toxin-antitoxin, Oct. 11, 1926. Immediately after the first injection, she developed severe migraine-like headaches, which lasted for about five days. This condition gradually turned into "the worst attack of asthma in her life." Epinephrine did not relieve the attack, and ephedrine was vomited. Skin tests with horse serum were positive, with diphtheria protein negative. The eosinophil count was 19 per cent. Tonsillectomy, treatment of sinuses and bacterial vaccines did not control the disease. Several months elapsed before the child recovered.

In the accompanying table, the data in the cases observed are given.

In all the patients observed, sufficient clinical data were found to warrant the diagnosis of allergic asthma. Patients with a mere asthmatic symptom complex, such as dyspnea and wheezing, in whom an allergic basis for the symptoms could not be demonstrated are not included.

The period of freedom from attacks before the injections ranged between two and thirteen months. Two children (patients 3 and 8) had never had asthma before they received toxin-antitoxin. They both were members of allergic families. In six cases the asthmatic seizures occurred shortly after the third injection, in two patients after the first one. The determination of the eosinophils was made before any therapy was instituted. In cases in which differential white blood cell counts had formerly been made, an increase of the eosinophilia following the toxin-antitoxin injection is very evident. The skin tests for horse serum were done immediately after the children returned to the clinic. Seven children gave positive reactions to horse serum.

It was noted that the attacks of asthma following toxin-antitoxin administrations were of an unusually severe type and did not yield as well to epinephrine as usually is the case in asthma. The routine dosage of epinephrine given for the control of attacks of asthma in these patients was 8 minims (0.5 cc.) administered subcutaneously. No larger doses were employed in any of these cases, and the injection was not repeated in the same attack. Two children vomited ephedrine (0.025 Gm.) when it was administered orally. Repetition of the other therapeutic measures which had formerly relieved, such as roentgen-ray therapy and vaccine injections, did not relieve the attacks. Two of the children were so severely ill that they had to be hospitalized for some time.

7. Waldbott, G. L.: Roentgen-Ray Treatment of Spleen in Asthma Bronchiale, Arch. Int. Med. **36**: 743 (Nov.) 1925.

COMMENT

In discussing the influence of toxin-antitoxin injections on the allergic manifestations observed, I believe that the fact should be stressed that one is not dealing with an anaphylactic condition or serum disease in these cases. The clinical conditions observed were of the true allergic type. There are authors who strictly separate anaphylaxis from allergy.[8] Although no conclusion in reference to this query is justified, the fact should be noted that allergic manifestations do arise following a process which more frequently develops the syndrome of anaphylaxis.

Two practical questions arise from this observation: Should toxin-antitoxin be given to asthmatic persons and to members of allergic families and if so, in what form is it best administered?

Since the classic work of Cooke and Spain[9] it has been generally known that the allergic diseases are inherited in accordance with mendelian laws. Often, some members of allergic families do not show allergic symptoms. It is not known whether or not this is due to the fact that a sufficiently strong stimulus, such as an upper respiratory infection or an infectious disease, had not yet been present to instigate active symptoms of asthma. That the injection of toxin-antitoxin may act as such a stimulus is suggested particularly by cases 3 and 8, in which the first attack of asthma came on following the administration of serum. It is a conservative estimate[10] that 1 per cent of the American population suffer from asthma or hay-fever. In view of this fact, one might conclude that among the thousands annually treated with serum, many may imme-

8. Coca, A. F.: Essentials of Immunology, Baltimore, Williams and Wilkins Company, 1926.

9. Cooke, R. A., and Spain, W. C.: Studies in Specific Hypersensitiveness: Familial Occurrence of Hay-Fever and Bronchial Asthma, J. Immunol. **9**: 521 (Nov.) 1924.

10. Scheppegrell, William: Prevalence of Hay-Fever, Laryngoscope **33**: 535-541 (July) 1923.

Data in Cases of Asthma Resulting from Serum Injections

Case	Sex*	Age	Allergic History	Duration of Asthma	Period of No Asthmatic Symptoms Before Toxin-Antitoxin	First Toxin-Antitoxin Injection	First Attack Following Injection	Eosinophilia		Response to		Skin Reaction to Horse Serum	Comment
								Before Injection	After Injection	Epinephine (8 Min.)	Ephredrine (0.025 Gm.)		
1. E. B.	♀	9 yr.	Had urticaria when 4 years old	4 yr.	13 months	10/11/26	Fifth day after first injection	4%	19%	—	Vomited	+	
2. H. G.	♀	7 yr.	Eczema as a baby	3 yr.	3 months	12/13/26	Two days after third injection	0%	14%	—	..	+	
3. M. S.	♀	13 mo.	Father, hay-fever; patient, eczema and frequently rhinitis	No asthma before	.....	10/14/26	One day after third injection	...	12%	..	Vomited	+	
4. T. D.	♂	9 yr.	Father's brother, asthma	6 yr.	5 months	11/ 4/26	One day after third injection	3%	8%	—	..	+	Desensitized by 4 injections of toxin antitoxin
5. B. F.	♂	6 yr.	Father, asthma; 2 aunts, asthma	4 yr.	6 months	8/13/26	One day after third injection	1%	7%	+	+	+	
6. A. S.	♂	3 yr.	Eczema when 5½ months old	1 yr.	2 months	8/12/26	Four hours after first injection	...	6%	..	..	..	Case referred by Dr. M. B. Kay
7. M. B.	♂	2 yr.	Father, hay-fever and urticaria; mother and sister, asthma	6 mo.	3 months	10/18/26	One day after third injection	2%	6%	+	+	+	Attack lasted 10 days
8. J. B.	♂	7 mo.	Mother, hay-fever and asthma	No asthma before	.....	9/15/27	Ten days following third injection	...	5%	+	+	+	

* In this column, ♂ indicates male; ♀, female.

diately become allergic or at least receive one more stimulus as one of the many factors which finally will lead to the outbreak of the disease.

Since the benefits of diphtheria immunization are too great to be abandoned even in asthmatic or potentially asthmatic persons, it is necessary to devise some ways to avert the disagreeable effects of serum. As a means of prevention, a thorough investigation into the history of each individual is recommended before giving toxin-antitoxin in order to determine whether asthma, hay-fever, urticaria or any of the other allergic disorders are present in the family or whether the patient himself ever suffered from any of these conditions. In all the patients recorded in the table, such a history could be obtained.

Whether or not the patient found to have hereditary allergy should be tested for his reaction to horse serum is left to the judgment of the physician. While a positive skin test makes imperative special caution in the administration of a serum, a negative one could not be considered as a safe guarantee against bad effects from the serum when one is dealing with a case in which there is a positive history of allergy.

In regard to the serums to be used for allergic patients, it might be thought at first that a serum freed from toxic protein-by-substances, the so-called anatoxin of Ramon [11] or the serum of Larson,[12] which is detoxified by means of its content of ricinus oil, could safely be given. Although the antianaphylactic properties of these serums are well established, there is enough reason to doubt their value in preventing allergic symptoms. It is now generally recognized that the substances which bring on allergy do not need to contain protein. Thus, a protein-free serum does not necessarily have to be free from an allergy-causing effect. Ricinus oil, on the other hand, not infrequently produces asthmatic attacks.[13] It is therefore difficult to conceive that a ricinoleated serum can prevent allergy. However, all these considerations are purely theoretical. The practical use of these serums may possibly reveal their innocence to the allergic patient. Until sufficient clinical data on these serums in connection with asthmatic patients are available, it seems to be best to return to the old method of Besredka,[14] who was first able to prevent the untoward symptoms of serum injections by giving small amounts of the serum at frequent intervals.

This method was tried in case 4 after the child returned with a recurrence of asthma following toxin-antitoxin administration. This patient received four injections of toxin-antitoxin, from 0.02 increasing to 1.5 cc. in intervals of four days. After the second desensitizing injection, the attacks subsided. He has been free from asthma since. No other treatment was employed. Although conclusions cannot be drawn from the observation of this single case, the method apparently is the least objectionable according to our present knowledge.

SUMMARY

1. Six asthmatic children who were free from asthmatic symptoms for several months had recurrences of attacks coincidentally with the administration of toxin-antitoxin. In two other children with an allergic family history, the first asthmatic attacks were brought on by toxin-antitoxin administration.

2. The attacks were of very severe type. They were not as easily controlled as ordinarily.

3. The skin tests for horse serum were found positive. In all cases eosinophilia was present; in seven of them the eosinophilia ranged higher after the injections than before.

4. It may be possible by giving small desensitizing doses of serum to prevent untoward symptoms from diphtheria prophylaxis in allergic patients.

1054 Maccabee Building.

11. Ramon, C.: Purified Diphtheria and Tetanus Antiserums and Prevention of Serum Sickness, Presse méd. **24**: 323 (March) 1926.

12. Larson, W. P., and Eder, Howard: Immunization Against Diphtheria with Toxin Detoxified with Sodium Ricinoleate, J. A. M. A. **86**: 998-999 (April 3) 1926.

13. Alilaire, E.: Hypersensibilité à la ricine, Ann. de l'Inst. Pasteur **28**: 605, 1914.

14. Besredka, A.: De la vaccination anti-anaphylactique, Compt. rend. Soc. de biol. **65**: 478, 1903.

Clinical Notes, Suggestions and New Instruments

A CONVENIENT METHOD FOR CLEANSING THE MEATUS PRIOR TO CATHETERIZATION

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The customary method of cleansing the urethral meatus before inserting the catheter calls for several ounces of antiseptic solution and pledgets of cotton in a finger bowl or other container. I have been using with great satisfaction Leonardo and Feirer's S. T.-37 (Sharp & Dohme) in an ordinary deVilbiss atomizer.

The following advantages are noted:

1. Convenience. The solution is instantly available and does not require special preparation.

2. Economy. A very small amount of solution is used.

3. Thorough cleansing. I have found that this method not only cleanses the surrounding parts but also spreads the meatus and literally washes out any discharge within 0.5 cm. of the meatus. This is done without trauma or discomfort to the patient.

4. Simplicity of technic. The labia can be held apart during the entire procedure, while the meatus is cleansed with the atomizer held in the right hand and while the catheter is inserted.

The atomizer is an economical and efficient method of applying any disinfectant solution in preparing the field for operation, whether it be laparotomy, normal delivery or any other procedure.

179 Allyn Street.

FOOD POISONING PROBABLY CAUSED BY BACILLUS PROTEUS

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On Tuesday, Oct. 4, 1927, there occurred thirty-six cases of intestinal poisoning among the personnel of the Sigma Nu fraternity house at Colgate University, Hamilton, N. Y.

On Saturday, October 1, chickens were purchased for the Sunday noon meal and were only partially consumed on Sunday. Those that remained were not used until Tuesday. As a result of local conditions and not the fault of the fraternity, the house was without ice from about Sunday noon until Monday night. On the morning of the 4th, the matron ate some of this left-over chicken and about one and a half hours later was taken with severe intestinal cramps and vomiting. The noonday meal on Tuesday was prepared by two of the members of the fraternity in her absence. They noticed a peculiar odor in the kitchen and one of them noticed that the chicken smelled as though it contained onion. This chicken was mixed with some left-over beef and the mixture served on toast. Of the forty who ate this, thirty-five became acutely ill within six hours of the meal. There were five men who did not eat this, either because they were eating elsewhere that particular meal or because the chicken smelled bad. Of these five, two had eaten every other meal at the fraternity house that fall. Of the thirty-five who became ill, one student

ate only his noonday meals at the fraternity house because his home was in town. These two observations pointed strongly to the noonday meal of Tuesday, October 4, as furnishing the cause of the poisoning. Of the five students who did not become ill, one student ate two portions, two ate one portion, and two ate less than one portion because it did not taste good.

The great majority of the fraternity members, on being questioned separately, blamed the left-over chicken as the cause of the poisoning.

A sizable portion of this chicken was secured and sent for laboratory examination. *B. proteus* was found, together with streptococci and colon bacilli. Samples of vomitus and feces from the ill students also yielded *B. proteus*. The cultures from the vomitus and feces were found pathogenic for guinea-pigs. This work was done at the Madison County laboratory and at the department of health laboratory in Albany.

The symptoms of the attack were: intensely painful intestinal cramps, repeated attacks of nausea and vomiting, the vomitus rapidly becoming blood tinged, and muscular cramps. There was no purging except when induced with laxatives. The temperatures were all subnormal, the pulses above normal. Only three of the thirty-five were seriously ill, they being taken ill among the first of the group. These three soon became pulseless but were brought back with stimulation.

The group recovered rapidly and, of the twenty-four hospitalized, twenty-two were discharged from the infirmary by the end of the second day and the remaining two by the end of the third day.

AN INTERESTING CASE OF SALIVARY CALCULI

H. L. BROOKS, M.D., MICHIGAN CITY, IND.

Mrs. E. P. R., aged 34, married, housewife, complained chiefly of swelling of the floor of the mouth, especially underneath the tongue. Mastication was painful at times, and there was slight pain at times radiating to the right ear.

As a child in school, she remembered slightly of having trouble of a minor nature underneath the tongue, and remembers of having expectorated small seedlike substances that seemed to exude from the under surface of the tongue.

Seven years ago she had three lower teeth extracted and about four weeks later she noticed a swelling under the tongue on the right side. It was painful and especially sensitive when she ate anything sour. This gradually subsided after she had worked a little stonelike substance from under the tongue, evidently a calculus.

Two years ago the swelling recurred and she consulted her family physician, who, after examining it, decided to puncture the swelling underneath the tongue. He got nothing on puncture and told her to return in a week. In the interval she removed with her finger a small calculus and the swelling subsided. She had no further trouble until she consulted me, ten days before the present report was written. She had a swelling underneath the tongue on the right side, tenderness underneath the jaw, and a radiating pain to the right ear. After examining it digitally, I had a roentgenogram made on a dental film and it revealed a pair of calculi.

Under local anesthesia I passed a probe into the lingual duct and felt a hard mass. I made an incision over the sublingual gland beginning at the duct orifice, exposed the stones, and removed them. To date the patient has been comfortable. The swelling and induration have disappeared.

The Scientific Spirit in Medicine.—There are many who believe that the secret of progress in medicine is to be found only in the laboratory, and choose that walk in life rather than engage in general practice because they consider that it is the only way to study medicine scientifically. The scientific spirit, however, is not the exclusive property of the laboratory worker. It is inborn in the individual, and whoever is possessed of the true scientific spirit can bring it to bear in the solution of any problems with which he is confronted in the course of his daily work.—Ramsay, A. M.: *Brit. M. J.* 2:1216 (Dec. 31) 1927.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

W. A. PUCKNER, SECRETARY.

DEXTROSE (See New and Nonofficial Remedies, 1927, p. 220).

The following dosage form has been accepted:

Sterile Solution of Dextrose (d-Glucose) 50 cc. Double End Vial: Each vial contains Dextrose, U. S. P., 25 Gm.; cresol, 0.1 per cent; distilled water, to make 50 cc.; buffered with diabasic sodium phosphate anhydrous, 0.44 per cent and potassium biphosphate anhydrous, 0.072 per cent..

Prepared by H. K. Mulford Company, Philadelphia.

CAPROKOL (Hexylresorcinol-S. & D.) (See New and Nonofficial Remedies, 1927, p. 320).

The following dosage form has been accepted:

Hexylresorcinol Solution S. T. 37: A solution of hexylresorcinol-S. & D., 1 part, in a liquid composed of glycerin 30 per cent and water 70 per cent, 1,000 parts.

ILETIN (INSULIN-LILLY) (See New and Nonofficial Remedies, 1927, p. 198).

The following dosage form has been accepted:

Iletin (Insulin-Lilly) U-100, 10 cc.: Each cubic centimeter contains 100 units.

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

W. A. PUCKNER, SECRETARY.

Articles Not Acceptable

TOPHIRIN TABLETS NOT ACCEPTABLE FOR N. N. R.

In the information sent the Council by the Bram Chemical Company, Philadelphia, its preparation "Tophirin Tablets" is stated to contain in each tablet: "Acid Phenyl Cinchoninic [cinchophen] Gr. 3½; Magnesium Salicylate Gr. 3½; Colchicine, Alkaloid Gr. 1/400." In the advertising and on the trade package the name "Tophirin" is followed by "Acid Phenyl Cinchoninic-Magnesii Salicylas-Colchicine Comp." and each tablet is stated to contain 7 grains of "Tophirin," but nowhere is the amount given of each of the drugs that are contained in a tablet.

On the trade package of Tophirin Tablets the following disease names appear: "Rheumatism, Sciatica, Neuralgia, Lumbago, Neuritis, Gout." In the advertising that accompanies the package, "Tophirin" is claimed to be "extremely valuable in Sciatica, Rheumatism, Gout, Neuritis, 'Headaches,' etc." It is suggested that "Tophirin courses" may be taken in "chronic or obstinate cases."

In the administration of cinchophen, the salicylates and colchicum it is essential that these drugs be given in amounts suited to the individual case and patient. There is no evidence showing that the combined use of these drugs is of advantage. It is thoroughly irrational to administer cinchophen, magnesium salicylate and colchicine in fixed proportion. There is no excuse for offering such a mixture to the profession without a declaration of the quantitative composition in the advertising and on the package.

The Council finds "Tophirin Tablets" unacceptable for New and Nonofficial Remedies because it is an irrational mixture offered to the profession without declaration of its quantitative composition and under a name that does not declare the potent ingredients but is therapeutically suggestive, and because it is sold with unwarranted claims and in a way that will lead to its ill advised use by the public.

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SATURDAY, JANUARY 28, 1928

TOBACCO

Nearly every community in the world is involved, in some way, in the tobacco problem. In 1921 the people of the United States spent approximately $1,500,000,000 on tobacco; many persons, who feel that there is a moral principle involved in human consumption of tobacco, have joined organizations for mass attacks against the practice. In some localities legal strictures have limited the sale of the plant in any form.

A session of the International Antitobacco League was held in Prague in 1927. Recently Prof. W. E. Dixon of Cambridge University delivered, in England, the Norman Kerr lecture, on "The Tobacco Habit." In the United States, a report of the Committee to Study the Tobacco Problem has just been published in book form. Unfortunately, the reaching of helpful conclusions after reading these and other articles is difficult. Presumably the reason is that the facts are difficult to establish. Many variables confuse investigators. A given set of determinations may not apply in another investigation. Tobacco may be snuffed, chewed or smoked, and, if smoked, it may be in the form of cigaret or cigar, or may be stuffed into a pipe. The amounts of nicotine in smoke vary with the thickness of cigar or cigaret; with the dampness, the tightness of packing or rolling and with the rapidity of combustion of the tobacco. In pipe smoking, the amount of nicotine at the mouthpiece is affected by the length of the stem and the presence or absence of a filter or catalyzer. Samples of tobacco are not more alike than are the susceptibilities of individuals. The amount of nicotine in the smoke may not bear any theoretically predictable relation to the amount in the tobacco. Furthermore, although the main effect of tobacco smoke is due to nicotine, other substances, such as ammonia gas, pyridine, pyridine derivatives and carbon monoxide, must be taken into account. Controlled conditions, therefore—one of the prerequisites of scientific work—are difficult to produce.

Nevertheless, it is known that nicotine causes stimulation, followed by depression, of both the central and the autonomic nervous systems. Because of its influence on the autonomic nervous system, tobacco modifies motion and secretion of the alimentary tract. Smoking has a demonstrable effect on pulse rate, blood pressure and the efficiency of the heart.

Nearly everything that comes in contact with the body, however, modifies its functions in some manner. What the world wants to know about tobacco is whether it is harmful, harmless or beneficial. To answer this question, it is necessary to avoid reasoning, without reservation, from the analogy of nicotine injections in animals to the effect of tobacco on man. Clinical opinion must not be confused with clinical fact, or any kind of opinion with experimental demonstration. That much remains unknown must be recognized. For instance, the rôle of tobacco in causing certain circulatory disorders and possibly sudden death in some persons remains to be investigated further. From the present available evidence the main conclusions that are justified seem to be the following: The use of tobacco even in moderate quantities seems to lower the efficiency of the heart under strain. This may be classed as a harmful effect. Taken moderately, tobacco tends to stabilize responses to sensory stimuli. This may be classed as a beneficial effect. Other effects depend on individual susceptibility, kind and condition of tobacco, method of taking it and amount consumed. Even tobacco amblyopia seems not to bear any relation to excessive use of the plant. Until more is known, the only general rule that can be given applies to those who feel ill effects from tobacco. Obviously, such persons should be guided by the advice of physicians who have made thorough investigations of their particular cases.

THE MOVEMENT OF THE BILE

In the transport of bile from the liver, where it is produced, along the biliary passages and its ultimate discharge into the small intestine, several factors are important. Failure or even temporary interruption of function of the normal activities at any point along the route is likely to lead to untoward consequences. Furthermore, the biliary paths are often the seat of surgical intervention for one reason or another, so that an adequate understanding of the anatomy, physiology and pathology of the biliary tracts is almost indispensable for the prevention of unsatisfactory postoperative results. For this reason the current knowledge regarding the functions of the biliary tract has been reviewed in THE JOURNAL from time to time. A reader may find the successive versions both confusing and contradictory. This is not merely the outcome of editorial perversity or ignorance but an evidence of the difficulty encountered in attempting to separate fact from fancy. Even an expert in the study of the subject remarked,[1] not long ago, that the justi-

1. Mann, F. C.: The Functions of the Gallbladder, Physiol. Rev. 4: 251 (April) 1924.

fication for a review of the work dealing with the functional significance of the gallbladder lies not so much in what is actually known concerning the function of this exceptional organ as in what has been imagined concerning its functions.

Next to the possible activities or "uses" of the gallbladder, the problem of the mechanism of the discharge of bile into the duodenum assumes a dominant importance. The very existence of a true sphincter at the duodenal end of the ductus choledochus has been questioned. The decades that have elapsed since Oddi's comparative study [2] of the structure that bears his name have not succeeded in supplying complete clarity. Oddi reported that the course of the duct through the wall of the duodenum differs in the various species of animals. The arrangement of the smooth muscles round the duct likewise differs. In each species studied he noted a definite sphincter at the duodenal end of the common bile duct. Forty years later, Giordano and Mann [3] of the Mayo Foundation, reviewing an extensive experience, have concluded that there is sufficient anatomic evidence to show that there is a bundle of muscles surrounding the termination of the common bile duct which could act as a sphincter. It is often difficult to find muscle fibers that encompass the duct exclusively, since they are closely intermingled with the circular fibers of the intestine. Sometimes what would appear to be the sphincter is only an accentuation of the muscle coat in the intramural portion of the duct over that of the extramural portion, by the addition of fibers from the circular coat of the duodenum. The interlacing of the muscle fibers passing round the duct and the muscle fibers of the duodenum is often exceedingly intimate. Usually there are definite bundles which are distinct enough to be considered as a sphincter.

The evaluation of the physiologic features of this mechanism has been even more difficult. Some question has been raised as to whether dilatation of the so-called sphincter of Oddi is actually a necessary part of the emptying of the passages. When the sphincter is destroyed or rendered inoperative, the gallbladder is not necessarily drained thereby. Consequently it has been suggested that the sphincter comes into play chiefly in the filling of the bladder, offering sufficient resistance to divert the stream of bile through the cystic duct into the bladder.[4] The alleged reciprocal relation between the contraction of the bladder musculature and the relaxation of the muscular fibers surrounding the bile duct in the duodenum has also been debated of late. Summarizing the conflicting views, the latest reviewers [2] of the work of the sphincter of the choledochus have stressed the errors inherent in the methods of study employed. In the light of the best observations now current they regard it as evident that there is a mechanism at the duodenal end of the common bile duct which has to do with the discharge of bile into the intestine and the filling of the gallbladder. This mechanism is affected by environmental factors and food and probably by nerve reflexes. Whether this mechanism consists of a true sphincter, and whether it is dependent wholly on the activity of the musculature of the duodenal wall or both, has not been established. More suggestive evidence is that a true sphincter exists, rather than that the control of the discharge of bile depends only on the action of the duodenal wall. It is probable, further, that the discharge of bile into the intestine is modified by peristalsis of the duodenum and in some respects depends on it; but the exact relationship of the two processes is not clear. Giordano and Mann gain the impression, from postmortem studies, that the sphincteric mechanism can be thrown into spasm by pathologic conditions in the gastro-intestinal tract and adjacent organs. The cause of some cases of jaundice and also of pancreatitis might be explained, they suggest, on the basis of spasm of this sphincteric mechanism producing obstructions to the outflow from both liver and pancreas. The last word on the function of the biliary passages has not yet been spoken.

2. Oddi, Ruggero: D'une disposition à sphincter spéciale de l'ouverture du canal cholédoque, Arch. ital. de biol. **8**: 317, 1887.
3. Giordano, A. S., and Mann, F. C.: The Sphincter of the Choledochus, Arch. Path. & Lab. Med. **4**: 943 (Dec.) 1927.
4. Howell, W. H.: Text Book of Physiology, Philadelphia, W. B. Saunders Company, 1927.

BLOOD CONCENTRATION AND ITS TREATMENT

The universal necessity of water for biologic processes is generally recognized; the consequences of deprivation of this medium in which the chemical changes of metabolism occur are not so clearly appreciated. In discussing the water balance of the body, Rowntree [1] has pointed out that for the maintenance of health the intake must be sufficient to maintain the amount of water in the body tissues necessary for maximal efficiency in metabolism and in the execution of other physiologic processes. This involves the removal of waste products and the dissipation of heat. A certain degree of desiccation of various organs, tissues and fluids ensues when the amount of water eliminated from the body exceeds the amount ingested, plus that produced through metabolic processes. The untoward consequences of such situations have only begun in recent years to receive the serious consideration they deserve.

The blood tends to maintain its integrity of composition with great tenacity. On this circumstance the persistence of health is in no small degree dependent. When the equilibrium involved is impaired, the outcome may be distressing. Hence Marriott [2] has emphasized that desiccation of the blood to even a slight degree results in impairment of the circulation and, as a result, in secondary functional disturbances

1. Rowntree, L. G.: The Water Balance of the Body, Physiol. Rev. **2**: 116 (Jan.) 1922.
2. Marriott, W. M.: Anhydremia, Physiol. Rev. **3**: 275 (April) 1923.

of almost every part of the body. There is an alteration in the metabolic processes and, when sufficient concentration of the blood occurs, a disturbance of the heat-regulating mechanism. As most of the observed physiologic effects of loss of water are referable to the concentration of the blood, and as the condition of the blood serves as a fair index of the degree of dehydration of the body as a whole, the subject of desiccation in general may, he adds, be well considered from the standpoint of desiccation of the blood, or anhydremia. As Marriott has pointed out, severe anhydremia is especially likely to occur in infants. This is due in part to the fact that they have a high water requirement which must be covered. Furthermore, the infant is entirely dependent on others for water administration, and may be offered an insufficient amount. Newly born infants nursing at the breast and not receiving fluid from other sources frequently become somewhat desiccated because of an insufficient water intake. In any infant the presence of infection is likely to lead to refusal of food, vomiting and diarrhea, with a resulting anhydremia. As a rule, if blood concentration can be restored to the normal level the condition of the infant is usually greatly improved and it soon regains the normal state.

Underhill of Yale University in particular has repeatedly called attention to somewhat different conditions in which the striking feature of the pathologic state is the concentrated blood. The most extensively investigated instances were afforded by cases of poisoning with the war gases. Underhill has reminded us that in certain fulminating cases of influenza a similar condition is presented, and in extensive superficial burns concentrated blood may be chiefly responsible for the clinical symptoms evoked. In eclampsia and in surgical shock the blood is generally concentrated above the normal level.

It might be assumed that the averting of an untoward outcome in all these cases would not afford serious difficulty. Why this supposition is not necessarily true has recently been stressed by Underhill [3] in an address before the New York Section of the American Chemical Society. In the case of anhydremia induced by water deprivation, simple administration of water rapidly restores the blood to its normal condition, whereas in anhydremia from superficial burns the restoration to normal is much more difficult. It would appear, Underhill comments, that in the two examples cited fundamental differences exist in the mechanism leading to the anhydremia. There are at least two ways in which blood concentration may be induced. In the first place one may imagine that a fluid, nearly simple water, or a dilute salt solution, in composition, leaves the blood vessels in response to the proper stimulus, resulting in a more concentrated blood, a dehydration, a desiccation as it were. Or again by a different type of mechanism, or perhaps as a result of a different form of stimulus, fluid of the nature of dilute plasma rather than of salt solution passes through the vessels, leaving behind a blood concentrated above normal.

Both of these types of change actually occur. The loss of plasma fluid from the circulation is apparently an outcome of some inflammatory reaction whereby the permeability of the capillary walls is notably altered. In the case of severe burns, for example, the vessels are so seriously involved in this way that they no longer are capable to the normal extent of retaining fluid. To be effective in such instances, the effort to restore the proper blood concentration must be persistent and prolonged if the treatment is to prove availing. This means more than the transient replacement of fluid. There is a critical period—a period necessary for restoration of the normal permeability of the capillary wall. During this process, fluid must be pushed continuously. Persistent effort may be lifesaving in the treatment of burns. As Underhill insists, therefore, the essential object is to keep the blood concentration near a normal level until the blood capillaries in the skin injured by the heat have had an opportunity to repair themselves and again become capable of holding within themselves the fluid of the blood in a normal manner.

3. Underhill, F. P.: Changes in Blood Concentration, with Special Reference to the Treatment of Extensive Superficial Burns, Ann. Surg. 81: 840 (Jan.) 1925.

Current Comment

FACTORS IN HUNGER

What is hunger? Mere introspection will not furnish a tenable answer to this question. The sensation commonly designated by the term hunger is usually referred in a somewhat vague way to the region of the stomach. Physiologists who have studied the demonstrable changes in this organ have discovered that when empty it undergoes intermittent contractions that can often be correlated with the peculiar sensations of hunger. As the stomach empties itself, the ordinary digestive contractions give way to a different type of muscular reaction—the so-called hunger contractions. Thus the textbooks propose the theory that hunger sensations or hunger pains are caused by contractions of the stomach which presumably affect some as yet undescribed sensory apparatus. There have, however, been challenges to the view that hunger is mainly of gastric origin. Central factors have been held responsible by some critics. It is suggested that a depletion of readily available food reserves in the blood affects the hunger center and that this gives rise to gastric contractions which, in turn, awaken the sensations that are recognized as hunger. Hoelzel,[1] who has investigated the question at the University of Chicago, points out that this explanation fails to account for the periodicity of the gastric hunger contractions. Moreover, Carlson produced gastric contractions by local

1. Hoelzel, F.: Central Factors in Hunger, Am. J. Physiol. 82: 665 (Nov) 1927.

stimulation in a subject with a gastric fistula. These contractions were experienced as hunger although they were not of central origin. Hoelzel himself ventures to support the possibility of central factors in the genesis of hunger on evidence that the gastric contractions may occur without giving rise to hunger sensation, and hunger may be experienced independent of these contractions. He succeeded in suppressing the desire to eat with an excessive food intake and finding that the subsequent gastric (hunger) contractions were then experienced as local (epigastric) sensations without hunger. On the other hand, hunger was manifested independent of gastric contractions after more or less prolonged abstinence from food. The common reference of hunger to the stomach is regarded by Hoelzel as being largely a consequence of manifestations that are mainly incidental to hunger. Hoelzel suggests that although the feeling of emptiness helps to refer hunger to the stomach, a more fundamental reason for this association evidently is the fact that hunger due to central conditions is ordinarily present when the periodic gastric sensations are manifested. But the epigastric sensations are often disagreeable and usually develop suddenly, while hunger due to central factors is not inherently disagreeable and the exact time of its onset defies introspective analysis. Consequently, he adds, the more prominent sensations in the gastric region are likely to be accepted as the index of hunger. Likewise, headache, weakness, mild nausea or other symptoms may come to be regarded as signs of hunger when they are regularly associated with it.

PHOSPHATIDIC ACID

In contrast with the true fats—the esters of fatty acids and glycerol—other fatlike substances occurring in living tissues have aroused considerable biologic interest. The group is sometimes referred to as "lipoids" and includes such familiar names as lecithin, cephalin, sphingomyelin, the cerebrosides and the sterols, notably cholesterol and ergosterol in the latter category. These lipoids differ from the simpler fats in various ways. Some of them contain nitrogen or phosphorus or both elements in their molecules. The earlier enthusiasm about the lipoids arose from the demonstration that they occur characteristically in abundance in the nervous tissues and promised, therefore, to throw light on the peculiar function of nervous matter. Subsequently it was ascertained that the phosphatides—the phosphorized nitrogenous lipoids also now sometimes designated as phospholipins—are present in every animal and vegetable cell. Hence they appear to be an indispensable component of "living matter." Lecithin and cephalin seem to be concerned in some of the immunologic reactions and in various hematologic reactions. Speculation about them has been rife for some time. This circumstance lends interest to a new type of related compounds that has been discovered by Chibnall and Channon[1] of University College, London. They found that leaf cytoplasm contains little, if any, phospholipin, in the commonly accepted use of this term. The major part of the ether-soluble phosphorus is present as the calcium salt of a diglyceridephosphoric acid. This accordingly differs from the familiar lecithin in being a nonnitrogenous phosphorized fat. The new substance may be regarded as the parent acid of the more commonly occurring phosphatides lecithin and cephalin. Chibnall and Channon propose to call it phosphatidic acid. To medical biochemists the new observations have a special import in view of the suggestion that calcium phosphatidate may be a component of animal as well as of plant tissues.

1. Chibnall, A. C., and Channon, H. J.: The Ether-Soluble Substances of Cabbage Leaf Cytoplasm: II. Calcium Salts of Glyceride-Phosphoric Acids, Biochem. J. **21**: 233, 1927. Channon, H. J., and Chibnall, A. C.: The Ether-Soluble Substances of Cabbage Leaf Cytoplasm: IV. Further Observations on Diglyceride-Phosphoric Acid, ibid. **21**: 1112, 1927.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARIZONA

Personal.—Dr. James W. Bazell has been appointed health officer of Winslow to succeed Dr. John R. Walls.——Dr. Joseph M. Greer, Mesa, has been appointed a member of the Medical Examining Board of Arizona to succeed the late Dr. A. Garfield Schnabel, Tucson.——Dr. Fred P. Perkins, Florence, has been appointed physician to the University of Arizona and has moved to Tucson.

CALIFORNIA

Society News.—Dr. Allen K. Krause, professor of medicine, Johns Hopkins University School of Medicine, Baltimore, gave a series of lectures before the San Diego Academy of Medicine, January 23-26, at the naval hospital, on "Tuberculosis."——Dr. William E. Mitchell, Oakland, addressed the Alameda County Medical Society, recently, on "Ruptured Appendix."——Prof. Franz Groedel, Bad Nauheim, Germany, addressed the San Francisco County Medical Society, Dec. 13, 1927, on "Diagnosis of Syphilitic Diseases of the Visceral Organs Especially by the Help of Roentgen-Ray Pictures"; Dr. Alexander S. Keenan, San Francisco, has been elected president of the society for 1928.——Dr. Richard D. Evans addressed the Santa Barbara County Medical Society, Dec. 12, 1927, on "Unusual Electrocardiograms."

Court Upholds Hospital Board in Barring Osteopaths.—The superior court at Long Beach rendered a decision, Dec. 19, 1927, setting aside a temporary injunction brought about by osteopaths in that community to prevent their exclusion from practicing in the Long Beach Community Hospital. The municipality furnished the site for the hospital and $190,000; the public subscribed $208,000, and Mrs. Adelaide Tichenor gave $350,000 toward the institution on condition that the city establish a public hospital. The injunction was sought on the basis that the leasing of the hospital to the Long Beach Community Hospital Board, a private organization, at a minimum rental was inconsistent with the public use to which the hospital was dedicated. The osteopaths further complained that the proposed lessee was a corporation composed entirely of physicians and surgeons and that it would exclude osteopaths from practicing in the hospital. The judge ruled, in part, that if the city itself had been operating the hospital it could legally have restricted practice to physicians and surgeons; that it would be guided by the principle of the greatest good for the greatest number, and that no city or other organization could be expected to provide the kind of service sought by minority believers in other branches of medicine.

Collection of Poliomyelitis Serum.—A member of the staff of the George Williams Hooper Foundation for Medical Research of the University of California will in the next few weeks canvass the entire northern part of the state in connection with the collection of serum for the treatment of victims of poliomyelitis. He will prepare a card catalogue containing

the pledges of adults or the consent of parents of older children willing to be bled for this purpose when the emergency arises. The foundation will compensate such persons at the rate of $10 for each hundred cubic centimeters of blood. A stock of preserved plasma will be kept at the laboratory and sent out on request in from 50 to 100 cc. quantities to any physician in the state with the understanding that he reimburse the foundation at the rate of $10 for each fifty cubic centimeters of plasma, or that an equal amount of plasma supplied by bleeding the patient during the few weeks of convalescence be returned to the laboratory. This will help maintain a rotating fund to pay part of the expense entailed in collection, testing and preserving the plasma. The foundation requests that the attending physician fill out a questionnaire sent out with the serum, as it is important that accurate data be available concerning the value of convalescent serum. Any other interesting observations should be reported promptly, so that proper investigation may be instituted. The director of the foundation, Karl F. Meyer, Ph.D., is requesting several medical societies and other organizations to appoint two representatives on an advisory committee in order that this program may be properly performed. He hopes to call a meeting of this committee soon, so that the work can be started with the least possible delay.

GEORGIA

Society News.—Dr. Dunbar Roy addressed the Fulton County Medical Society, Atlanta, January 19, on "Clinical Observations on the Eustachian Tube."——Dr. Albert H. Cochran read a paper before the Emory Medical History Club, Atlanta, January 23, on "History of Blood Letting," and Dr. Gordon G. Allison on "History of Kidney Stones."——Dr. Daniel C. Elkin addressed the Fulton County Medical Society, Atlanta, Dec. 1, 1927, on "Abscess of the Lung."

Personal.—Dr. James R. Dykes, Marshallville, has taken up the duties of health officer of Grady County, succeeding Dr. Mannie A. Fort, who was in charge of the health work in both Grady and Decatur counties; the two county arrangement could not be continued, it is reported, as state and federal aid for it had been exhausted.——Dr. Elmore C. Thrash, Atlanta, has been appointed by the Grand Masonic Lodge of Georgia as director of a movement to establish a tuberculosis children's hospital at Alto in connection with the present institution there. The state has agreed, it is reported, to maintain the hospital.

ILLINOIS

Personal.—Dr. Charles E. Shultz has tendered his resignation as city health director of Bloomington in order to accept the superintendency of Fairview Sanatorium.——Dr. Lewis C. Messner, Potomac, celebrated his eighty-third birthday, recently, with a dinner at his home attended by about sixty friends.——Dr. Jacob C. Krafft, Chicago, gave a clinic for deficient children at St. Mary's Hospital, East St. Louis, January 12, under the auspices of the St. Clair County Medical Society, and Dr. Lewis W. Bremerman, Chicago, addressed the society in the evening at a banquet.

Chicago

Abortionist Sentenced.—Mrs. Lucy Hagenow was sentenced by Judge Feinberg to fourteen years in the state penitentiary, January 14, it is reported, for murder by a criminal operation.

Institute of Medicine.—The Society of Medical History of Chicago and the Institute of Medicine will hold a joint meeting at the City Club, February 2. Dr. Carey Culbertson will discuss the background and early years of the Chicago Gynecological Society; Dr. Gustavus M. Blech, "Ernst von Bergmann as a War Surgeon"; Dr. Benjamin Barker Beeson, "Potain: His Life and Works," and Dr. Irving S. Cutter, "History of Puerperal Fever" (lantern slides).

Society News—Ochsner Memorial Lecture.—The second Albert J. Ochsner Memorial Lecture will be given at 40 East Erie Street, February 2, at 8:15 p. m., under the auspices of the north side branch of the Chicago Medical Society, by Dr. Cyrus C. Sturgis, Simpson Memorial Institute for Medical Research, Ann Arbor, on "Pernicious Anemia"; a dinner in honor of Dr. Sturgis preceding the meeting will be at St. James Community House, 666 Rush Street, $1.50 per plate. For reservations, call Randolph 0244.——Dr. Kellogg Speed will address the Chicago Society of Industrial Medicine and Surgery at the Great Northern Hotel, February 7, on "Traumatisms of the Carpal Bones."

Dogs Quarantined to Check Rabies.—The state commissioner of agriculture and the state veterinarian, acting on the recommendation of state and local health officers, ordered a quarantine on dogs in Cook County, January 19, which prohibits the shipping of dogs from place to place in the county and the taking of dogs into or out of the county. The object is to prevent the spread of rabies. It is reported that between January 1 and January 18, a total of 272 persons in Chicago were bitten by dogs and that on the latter date 100 persons were taking the Pasteur treatment for rabies at the city health department. Among fifty-four dogs' heads brought in for examination at the city health department, forty-eight were said to have shown the presence of rabies.

Personal.—Prof. Arthur H. Compton, Ph.D., recent Nobel Prize winner, was guest of honor at a faculty dinner at the University of Chicago, January 12; Dr. Compton is a member of the Council on Physical Therapy of the American Medical Association.——Dr. Charles A. Elliott, Vice President of the American Medical Association, has been appointed a member of the board of governors of the Northwestern University Foundation.——Dr. Peter Kronfeld has received the first research appointment under the Kuppenheimer Foundation at the University of Chicago, where he has been appointed assistant professor of ophthalmology. According to *Science*, Dr. Kronfeld until recently was an assistant in the eye clinic of Prof. Josef Muller, Vienna.——Dr. Arthur R. Metz has been appointed chief surgeon of the Chicago, Milwaukee and St. Paul Railway to succeed the late Dr. Benjamin F. Lounsbury and will have jurisdiction east of the Missouri River.

INDIANA

Society News.—Dr. John A. MacDonald, Indianapolis, addressed the Madison County Medical Society, Anderson, January 17, on "Management of Heart Failure as a Complication in Various Disorders."——Dr. Larue D. Carter was elected president of the Indianapolis Medical Society, January 10.——The Elwood Medical Society has purchased some equipment for the laboratory at the Mercy Hospital of that city; the Sisters of St. Joseph, who are in charge of the hospital, are to provide a special room for the laboratory.——The Indianapolis Medical Society conducted a symposium on pneumonia, January 17; the speakers were Drs. Arthur E. Guedel, William Shimer, John M. Cunningham, James O. Ritchey, Reuben A. Solomon and Leon G. Zerfas.——Dr. Charles H. McCully, Logansport, addressed a public meeting sponsored by the Parent-Teachers Association, North Manchester, January 17, on "Preventive Medicine"; Dr. McCully represented the bureau of publicity of the Indiana State Medical Association; about 450 persons attended.

IOWA

Personal.—Dr. James Wallace, Des Moines, has resigned as deputy commissioner of health of Iowa to accept a position as a field representative of the American Public Health Association.——Dr. Henry G. Langworthy, Dubuque, has announced his candidacy for Congress in the third Iowa district.——Dr. and Mrs. Hugh T. Walker, Riceville, recently celebrated their fiftieth wedding anniversary.——Dr. Michael A. Cunningham, formerly assistant superintendent of the tuberculosis hospital at Oakdale, has taken up his duties as medical director of the Holy Cross Sanatorium, Deming, New Mexico.

Society News.—Dr. Kellogg Speed, Chicago, addressed the Linn County Medical Society, Cedar Rapids, Dec. 7, 1927, on the unhappy results in fracture.——Dr. Francis M. Roberts, Knoxville, addressed the Marion County Medical Society, Dec. 8, 1927, on "Cardiac Conservation," and Dr. Elmer E. Morton, Des Moines, on "Chronic Constipation."——At a joint meeting of the Plymouth County Medical Society and the staff of the Sacred Heart Hospital, Le Mars, Dec. 6, 1927, Dr. Walter J. Brunner, Akron, spoke on "Tuberculosis in Man"; R. B. Hunter, D.V.M., Remsen, on "Bovine Tuberculosis," and P. L. Ellis, D.V.M., Le Mars, "Contagious Abortion in Cattle." Dr. Charles E. Shepard, Le Mars, gave a case report on malta fever.

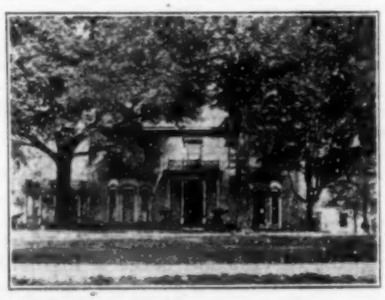
KENTUCKY

Personal.—Dr. Clarence H. Harris, formerly city health officer of Louisville, has again been appointed to that position to succeed Dr. Griffin C. Kelly. Dr. Harris was formerly county health officer and president of the Jefferson County Medical Society; Dr. William C. Martin, who served for a time during Dr. Harris' former term, has been appointed assistant health officer.——Dr. John B. Wadlington, Princeton, has been elected health officer of Caldwell County.

Evolution Bill Introduced.—Representative J. R. Hobbs of Powell and Wolfe counties introduced a bill in the house, January 6, which would prohibit the teaching of the theory of evolution in all schools supported in whole or in part by state funds, and fine any teacher found guilty of teaching the theory of evolution not less than $100 or more than $500.

Society News.—Dr. Clarence J. Broeman, Cincinnati, addressed the Bracken County Medical Society, Brooksville, December 6, on "Diagnosis and Treatment of the More Common Skin Diseases," illustrated with lantern slides.——The Daviess County Health Department was closed, January 3, it is reported, owing to the refusal of the fiscal court to make an appropriation of $7,500 for the health department. This amount, together with the state appropriation of $2,500, was considered necessary for the conduct of the health department, and the court decided to appropriate the same amount as last year, $6,250. The county board of health was to meet the following day to determine what steps to take. The budget of the health department for the last eight years was $10,000 annually, part of which heretofore has been appropriated by the Rockefeller Foundation, New York. ——At a meeting of the Cumberland Valley Medical Society, Harlan, recently, Dr. William O. Johnson, Louisville, read a paper on "Care of Premenopause Symptoms"; Dr. John H. Blackburn, Bowling Green, president-elect of the Kentucky State Medical Association, read a paper on "Prevention of Cancer," and Dr. Paul A. Turner, director, state tuberculosis sanatorium, Louisville, on "Physical Examination of the Apparently Well." Dr. Edward Wilson, Pineville, was elected president of the Cumberland Valley Medical Society for 1928.

State Society Lends Building for Trachoma Hospital.—The Kentucky State Medical Association has lent to the U. S. Public Health Service for use as a trachoma hospital the former home of Mrs. Elizabeth Irvine which she bequeathed to the society as a memorial to her grandfather, Dr. Ephraim McDowell. The building was altered and equipped to accommodate thirty patients. During the first year it was opened, patients were received from forty counties in Kentucky and from three other states, the total number treated in that year being 167 admitted and 869 outpatients. Trachoma work in Kentucky was resumed with the establishment of this hospital at Richmond at the urgent request of the state health department. Trachoma hospitals had been established in various localities following surveys made by the public health service in 1912, but the last of these hospitals in Kentucky was closed in 1924. Patients at the Richmond Hospital receive intensive treatment for trachoma, are provided with an abundance of food and are instructed in sanitation. The hospital is also a center for field work consisting of field clinics for the purpose of determining the prevalence of trachoma, making diagnoses and giving lectures on public health; it is in charge of a full-time medical officer especially trained in ophthalmology and assisted by two graduate nurses.



MAINE

Personal.—Dr. Roland L. McKay, Augusta, has been appointed medical examiner for Kennebec County, succeeding Dr. Warren B. Sanborn, Augusta, who resigned to accept the superintendency of the Augusta State Hospital.

Canadian Epidemic Spreads Across the Border.—The state commissioner of health, Dr. Clarence F. Kendall, Augusta, stated, January 6, it is reported, that the outbreak of fifteen cases of typhoid in Van Buren and vicinity has been traced to the epidemic across the St. John River at St. Leonard, N. B., Canada. The U. S. Department of Agriculture has prohibited dairy products being shipped into the United States from an area of 40 miles around St. Leonard. Posters have been distributed in French and English advising residents of danger of infection in visiting St. Leonard, and offering a vaccination against typhoid without charge; about 600 have thus been immunized. The number of cases in the St. Leonard epidemic amounted to about 103 at the time of this report; it was said to be due to pollution of the public water supply.

MARYLAND

Johns Hopkins Surgical Society.—The second annual meeting of the Johns Hopkins Surgical Society was held in Baltimore, January 20-21. Clinics were conducted in the new dispensary building, at the Wilmer Eye Institute and in the amphitheater at the hospital. Luncheon was served in the roof garden of the Phipps Psychiatric Clinic. The afternoon was devoted to lectures delivered, among others, by Drs. Roy D. McClure, Henry Ford Hospital, Detroit; Wilder G. Penfield, Presbyterian Hospital, New York; Winford H. Smith, superintendent, Johns Hopkins Hospital, and Lewis H. Weed, dean and professor of anatomy, Johns Hopkins University School of Medicine. Governor Ritchie addressed the society at a banquet at the Alcazar on January 20. Dean Sage, president of the board of trustees of the Presbyterian Hospital, New York, and Dr. Charles Browne, Princeton, N. J., also spoke; Dr. Dean DeWitt Lewis, professor of surgery at Johns Hopkins, was toastmaster.

New Chemistry Building.—The University of Maryland recently dedicated a new chemistry building for which the legislature appropriated $210,000. The state section of the American Chemical Society was host to the Washington, Philadelphia, Virginia, Delaware and New Jersey sections at a meeting at College Park during the ceremony. The principal speaker at the ceremonies was Edgar F. Smith, and at the dinner, Charles H. Herty. The building provides laboratories for analytic, colloidal, industrial, organic and general chemistry, and lecture rooms. It will house also the biochemical laboratory and that of the state feed, fertilizer and lime inspection service. Friends have donated funds for purchasing equipment and furniture as follows: H. A. B. Dunning, for the organic laboratories; Samuel W. Wiley, Baltimore, for the analytic laboratories; Dr. and Mrs. M. L. Turner, Berwyn, Md., for the general laboratories; C. G. Campbell, Kewaunee, Wis., for the colloidal laboratories, and the Chemical Alumni of the University of Maryland for the industrial laboratories, in honor of each of whom a laboratory has been named.

MASSACHUSETTS

Society News.—Dr. Hyman Morrison addressed the Boston Medical History Club, January 27, on "Early Jewish Physicians in America"; Dr. Edward C. Streeter, on "Struggle Against Latin in the Sixteenth Century," and Mr. Afred Ela, on "Art Reference Libraries and Medicine."——Dr. Herrmann L. Blumgart addressed the Harvard Medical Society at the Peter Bent Brigham Hospital, January 24, on "Velocity of Blood Flow in Circulatory Failure in Anemia and in Pulmonary Emphysema."——Dr. Abraham Myerson will address the Essex South District Society, February 8, at the Daenvers State Hospital on "Some Aspects of Mental Disease."

Personal.—Edwin G. Boring, Ph.D., director of the psychologic laboratory, Harvard University, Boston, has been elected president of the American Psychological Association.——Dr. Roderick B. Dexter has been appointed chief executive officer of the Boston Psychopathic Hospital, succeeding Dr. Clarence A. Bonner. Dr. Dexter is a graduate of McGill University Faculty of Medicine, Montreal, and has practiced in Colorado and New York; in 1917 he joined the staff of the Boston State Hospital, whence he was transferred to the Taunton State Hospital.——Dr. Frederick W. Baldwin has been appointed chief of staff of the new Hunt Memorial Hospital in Danvers, which hospital is to be supported by the Catherine Hunt fund of $105,000.

Bills Introduced.—House bill 488 would amend the workmen's compensation act to provide that when the injury claimed is a hernia, compensation shall be paid only on proof as to the definite time when the hernia occurred; that total disability from work was coincidental with the injury, and that notice was given to the employer within forty-eight hours.—— House T. N. 8 provides that every prescription issued by any medical practitioner must be written and shall contain the name of the person for whom issued, the date when issued, a concise statement of the disease for which it is issued, and the effect sought to be obtained by the use of such prescription. Three copies must be made. The original must be kept on file by the physician; two copies are given to the person for whose use the prescription is written, one to remain his copy and the other to be taken to the proper place to be compounded.

MISSISSIPPI

Bills Introduced.—House bill 35 would provide that all male persons applying for licenses to marry must be examined as to the existence of venereal disease.

NEW JERSEY

Hospital News.—The governors of the Hackensack Hospital, Hackensack, reported the receipt of a $5,000 bequest from the Courtlandt Linkroum estate and a gift of $5,000 from the estate of Dr. George Howard McFadden to endow a bed in memory of Mrs. McFadden.

Society News.—Dr. Wells P. Eagleton, Newark, has been elected president of the New York Otological Society for 1928.——Dr. Joseph Collins, New York, addressed the Atlantic County Medical Society, Atlantic City, January 13, on "The Progress of the Neurologist."——At a meeting of the Hudson County Medical Society, Jersey City, Dec. 6, 1927, Dr. Ross McPherson, New York, spoke on "Obstetric Analgesia."——Dr. Edward L. Keyes, professor of urology, Cornell University Medical College, New York, addressed the Medical Section of the Rutgers Club, New Brunswick, Dec. 16, 1927, on "Tumors of the Bladder."——The president of the state medical society, Dr. Walt P. Conaway, addressed the Salem and Sussex county medical societies, recently, on the work of the state medical society.——Dr. Henry O. Reik, editor of the *Journal of the Medical Society of New Jersey*, addressed the Salem County Medical Society, Dec. 14, 1927, on "Immunization Against Diphtheria," and Mr. D. C. Bowen, director, state board of health, on "Control of Scarlet Fever"; at the conclusion of the meeting, the society enjoyed a roast pig dinner.——Dr. Karl Winfield Ney, New York, addressed the Somerset County Medical Society, Dec. 8, 1927, on "Traumatic Lesions of the Central Nervous System and Intercranial Pressure."——Dr. Roger W. Moister addressed the Summit County Medical Society, Dec. 27, 1927, at Wallace Pines on "Diet and Reproduction."——Dr. Felix Baum, Newark, formerly of Denver, addressed the December meeting of the Newark Academy of Medicine on "The Heart in Pulmonary Tuberculosis."——Dr. John B. Morrison, for several years recording secretary of the Medical Society of New Jersey, was tendered a testimonial dinner, in New York, January 21, and was presented in behalf of the society with a platinum wrist watch.

NEW YORK

Society News.—Dr. Gustavus A. Humphreys has been elected president of the West Side Clinical Society. At this meeting, Raymond L. Ditmars gave an illustrated address on "Venomous Reptiles."——Dr. Karl Winfield Ney addressed the New York Physicians Association at the New York Academy of Medicine building, January 25, on increased intracranial pressure, and Dr. Abraham Myerson, Boston, on brain trauma.

Bills Introduced.—House bill 84 is an attempt of the chiropractors to exempt the practice of chiropractic from the medical practice act. They would do this by amending the definition of the practice of medicine so as to make it apply to practices other than "by locating and determining misalined or displaced vertebrae of the human spine."——House bill 102 would provide for the reasonable fees of a physician for examining a person arrested and charged with being intoxicated while operating a motor vehicle, or otherwise, at the time of the commission of the crime.——House bill 156 would amend the osteopathic law so as to provide that an osteopath may be permitted to practice surgery if he passes the regular medical examination in surgery. The amendment would also allow osteopaths to use narcotics for relief of suffering by administration but not by prescription, and antiseptics, vaccines and antitoxins.

The Mentally Ill Crowd the Hospitals.—Notwithstanding the new buildings for the care of the insane, the state hospitals of New York are more crowded than at any time in recent years, according to a report by Dr. Frederick W. Parsons, Albany, head of the department of mental hygiene. A $50,000,000 bond issue was authorized in 1923 to enlarge the state hospitals. It appears now that when this fund is expended there still will be overcrowding even if there is no increase in patients from now until the buildings are completed. Dec. 1, 1927, there were said to be 10,509 more patients than the facilities warranted; the eighteen civil hospitals were crowded to 31.9 per cent above their normal capacity. Governor Smith has suggested already that another bond issue may be necessary. The report shows the increase in the number of patients on July 1 of each year for several years. In the first five months of the present fiscal year, there was an increase of 961, indicating that the gain for the year at the same rate would be 2,300 patients. The increase in the previous fiscal year was 1,891.

New York City

Physicians' Art Exhibit.—The New York Physicians' Art Club will hold its second annual exhibition at the New York Academy of Medicine, April 1. Contributions will be welcomed from any physician in the United States. For further information inquire of Dr. Henry A. Bancel, 1 West Sixty-Eighth Street, New York.

Personal.—At the annual meeting of the American Anthropological Association, Andover, Mass., Marshall H. Saville, Loubat professor of American archeology, Columbia University, New York, was elected president.——Dr. Jacob Buckstein has been appointed an instructor in gastro-intestinal roentgenology in Cornell University Medical College.——Dr. Joseph G. Wishner has been granted the first Henry W. Frauenthal scholarship by the Hospital for Joint Diseases.——Dr. Paul W. Aschner has been appointed senior attending neurologist of the Brownsville and East New York Hospital.

Warning Against Rabies.—The city department of health states there has been a great increase in the number of dogs along with the increase in the population, and that a warning now against the danger of rabies is pertinent. During 1927, up to December 10, 309 persons had been treated for rabid dog bites and six persons had died from rabies. In the ten years prior to 1927, the department of health treated 2,821 persons who had been bitten by rabid dogs and among these eighteen died. The law requires the muzzling, leashing and licensing of dogs, but it is necessary, the department states, to demand the cooperation of the public to see that dogs are effectively muzzled and in other ways to assist officials in protecting them against injury and disease.

Society News.—Dr. Elliott P. Joslin, Boston, addressed the Medical Society of the County of New York, January 23, on "Ideals in the Treatment of Diabetes and Methods for Their Realization," and Dr. William C. White on "Diabetes in Surgery."——Dr. Samuel Gross addressed the Yorkville Medical Society, January 16, on "Tuberculosis in Children," and Dr. Ward B. Hoag, "Children as a Specialty."——Dr. Henry T. Chickering addressed the Association of Italian Physicians, January 16, on "Prognosis and Treatment of Pneumonia."——Thirty New York fellows of the American Stomatological Association attended a meeting in Philadelphia, January 18.——Dr. John C. A. Gerster has been elected president of the American Hungarian Medical Association for 1928.——Dr. Bethuel B. Vincent Lyon, Philadelphia, addressed the Medical Society of Bay Ridge, January 10, on "Use of the Duodenal Tube in Diagnosis and Treatment."

OHIO

Personal.—Dr. Burton O. Clark, Cleveland, has been appointed assistant surgeon in the hospital at the National Soldiers' Home, Southern Branch, National Soldiers' Home, Va.——The *Japan Medical World* notes that Dr. Martin H. Fischer of the University of Cincinnati College of Medicine delivered a series of lectures at colleges and universities in Japan, ending Oct. 27, 1927, and that they were appreciated by Japanese physicians and university authorities.

Unlicensed Practitioners Arrested.—Russell Hoker, an unlicensed chiropractor of Columbus Grove, was fined on two counts at Ottawa, recently, for practicing medicine without a license, and was ordered to cease practice. Paul O. Mende, an unlicensed chiropractor at Ironton, was indicted for practicing without a license and required to put up a $2,000 bond. Nora Pfeiffer, Ironton, an unlicensed "cancer specialist," has been released on a $4,000 bond following indictments on two counts for practicing without a license. O. W. Geroux and Hilda Geroux of Celina were arrested for practicing chiropractic without a license, recently, and released on $500 bond.

Veteran Physicians Honored.—The Montgomery County Medical Society, Dayton, gave a banquet, January 13, in honor of twelve pioneer members of the society, each of whom was more than 70 years of age and all but two of whom were still in practice. The announcement contains a picture of each of the guests of honor, who were:

Dr. George Goodhue	Dr. Henry S. Jewett
Dr. Webster S. Smith	Dr. Charles H. Humphreys
Dr. George B. Evans	Dr. David C. Lichliter
Dr. Charles W. King	Dr. Albert H. Lane
Dr. Levi Spitler	Dr. Francis A. Duckwall
Dr. Gamaliel C. Myers	Dr. George H. Geiger

On the following day, Dr. Spitler passed away at the age of 84 after a brief illness; previously he had been indisposed.

Help for Poliomyelitis Victims.—The Tuscarawas County Medical Society has made an effort to have every patient who suffered from infantile paralysis in the recent epidemic in that community to attend a clinic in Dover to which Dr. Walter A. Hoyt, Akron, was invited to advise what could be done for these patients. Of the fifty-five examined at the clinic, forty-eight were victims of the recent epidemic. The service clubs of Tuscarawas County, in conjunction with the medical society, employed an orthopedic nurse to assist local physicians in caring for these cripples. This work will be done under the direction of a committee of three appointed by the medical society. A similar clinic was conducted at Martins Ferry in Belmont County. Dr. Edward Harlan Wilson was the advisor at this clinic and the observations made were similar to those in Tuscarawas County. Many patients were not under medical care, and were suffering from deformities brought about through lack of rest and other facilities.

Millions for Teaching and Investigation in Pediatrics.—William C. Proctor has given $2,500,000 to the Children's Hospital of Cincinnati, mostly for teaching and investigation; about $500,000 will be used for building a research laboratory and for the development of the outpatient clinic. Mr. Proctor is president of the board of trustees. The Children's Hospital is closely affiliated with the College of Medicine of the University of Cincinnati through its pediatric

department. The professor of pediatrics in the college of medicine, Dr. A. Graeme Mitchell, is the chief of staff and medical director of the Children's Hospital. Associated with it are other hospitals and institutions concerned in the care of children, so that it is possible to give medical instruction in all types of pediatric work. Its policy is the coordination of voluntary, part-time and full-time staffs in teaching, investigation and the care of patients. Mr. Proctor's gift is of special significance in that it permits a great expansion of pediatric work in Cincinnati, and also in that it is for investigation in clinical, laboratory, preventive and social service work. The Cincinnati Children's Hospital is considered one of the best of its type.

PENNSYLVANIA

Society News.—Among others, Dr. Frederick M. Jacob, Pittsburgh, addressed the Allegheny County Medical Society, January 17, on "Rosacea and Some Accompanying Gastro-Intestinal Conditions."——The Pittsburgh Pediatric Society held a symposium, January 20, on puberty; the speakers were Dr. Henry T. Price, Dr. Frederick B. Utley, Dr. Sidney A. Chalfant, Dr. Cornelius C. Wholey and William T. Root, Jr., Ph.D.——The board of trustees of the Medical Society of the State of Pennsylvania decided at its last meeting to increase the annual dues of the state society by $2.50 beginning with 1929; Dr. William C. Woodward of the Bureau of Legal Medicine and Legislation of the American Medical Association discussed at this meeting the ideal basic science law.

Oliver Memorial Research Foundation.—The board of trustees of St. Margaret Memorial Hospital, Pittsburgh, announces a gift of funds to establish a laboratory for clinical and biologic research to be known as the John C. Oliver Memorial Research Foundation. The donor is Mrs. John C. Oliver of Sewickley. The gift will provide generously for the equipment and maintenance of such a department in the hospital. A full-time biochemist will be in charge under the direction of a committee from the staff comprising Drs. Paul Titus, Ernest W. Willetts and Charles J. Bowen. The new department will not take part in routine laboratory work of the hospital, but will be available to the entire medical staff for research on any general medical problem. St. Margaret Memorial Hospital was founded by John Hopson Shoenberger and is conducted under the direction of the Episcopal Diocese of Pittsburgh.

Philadelphia

Society News.—Dr. Orlando H. Petty was elected president of the Medical Club of Philadelphia at the annual meeting, January 20.——A fund of nearly $8,500 has been subscribed by the Medical Alumni Association of the Medico-Chirurgical College with which to assist children of the alumni who engage in the study of medicine.——Dr. Everett S. Barr has been elected president of the Philadelphia Psychiatric Society for the ensuing year.

Skin and Cancer Hospital.—Recently, the Skin and Cancer Hospital of Philadelphia was organized. The board of directors is composed of representative Philadelphians, and Mr. Edgar B. Moore, president of the Penn Worsted Mills, is president. A building has been purchased at 806-808 Pine Street which will be remodeled and equipped with laboratories for research and for the treatment of all classes of skin diseases. Dispensaries will be opened and clinics will be held in the evening for persons unable to attend during the day. Dr. Albert Strickler, professor of dermatology and syphilology at Temple University School of Medicine, will be the medical director.

New Health Chief to Reduce Bureau Divisions.—Dr. Andrew A. Cairns, the recently appointed director of the department of public health, will reduce the number of divisions in the bureau of health from thirteen to five in a reorganization which is meant to provide efficiency at less expense. Dr. Cairns, who was chief of the bureau for twenty-one years, proposes to drop three division chiefs, Dr. Ward Brinton of the tuberculosis division; Dr. Albert H. Smith of the division of epidemiology, and David C. Clegg of the milk and food division. The division of medical inspection of private schools, of which Dr. Henry A. Strecker is director, is to be merged with the division of child hygiene, and Dr. Harriet L. Hartley will become chief. Dr. Strecker will work part time. The five divisions to be created in the bureau of health are those for communicable diseases, laboratories, child hygiene, housing and sanitation, and health and board of health.

Personal.—Dr. Leon Felderman was decorated with the cross of Chevalier of the Legion of Honor of France by M. René Weiller, consul of France, in the office of the mayor of Philadelphia, January 10.——Dr. Charles W. Burr, professor of mental diseases, University of Pennsylvania School of Medicine, has presented to the library of the university a collection of autographs which include those of Presidents Fillmore, Lincoln and Cleveland, King George III and Queen Victoria.——Dr. Joyce T. Sheridan, medical director of the Philadelphia Life Insurance Company, was elected president of the Medical Examiners Association, January 6. The association is now in its twenty-sixth year.——Dr. Leopold Goldstein has been appointed a fellow at the Gynecean Hospital Institute for gynecologic research.——Dr. Edward B. Hodge has been made a charter trustee with life tenure of Princeton University.——Dr. William W. Keen celebrated his ninety-fourth birthday, January 19.——Drs. Abraham I. Baron and Charles H. Turner have qualified for the Civil Service Commission as assistant physicians in the bureau of hospitals.

SOUTH DAKOTA

Progress in Health Work in South Dakota.—Sixteen years ago the appropriation for the state board of health of South Dakota was $500 a year; there were no public health nurses, tuberculosis clinics, or preventoriums, and the Christmas seal sale to aid tuberculosis work amounted to less than $150. Today, South Dakota has a 250 bed sanatorium for tuberculosis patients, and hundreds of free tuberculosis clinics have been held throughout the state in recent years. Public health nursing, the managing director of the state public health association says in his annual report, is now an accepted part of the routine in many counties, and three counties are asking for full-time nursing service. The health camp, promoted by the association, has completed its fifth year. The Christmas seal sale last year amounted to about $23,000, and the appropriation for the state department of health, until it was reduced recently, was more than $50,000 a year. One of the most interesting features of the work of the health association is Camp Wanzer which, during last summer, accommodated fifty-five children. A new building, the fourth, was erected last year which will provide for a larger number of children in camp next summer. The association is considering a new line of activity, namely, heart disease. The tuberculosis work is provided for by the annual Christmas seal sale.

TENNESSEE

Personal.—W. G. Stromquist has resigned as director of the division of sanitary engineering of the health department of Memphis to accept a similar position in Birmingham, Ala. ——Dr. Augustus A. Oliver, Paris, was reelected county health officer at the annual meeting of the county court, January 9; Dr. Oliver has been in public health work in this community for about twenty years, and is also city health officer.——Dr. George D. Butler, Pulaski, has been elected health officer of Giles County.

Society News.—Drs. Winfield S. Farmer and Worchester A. Bryan, Nashville, addressed the Robertson County Medical Society, Springfield, November 29, on "Relation of Insanity to Crime" and "Safeguarding the Surgical Patient," respectively.——The chest clinic of the Knoxville Health Center during 1927 examined 1,097 persons for tuberculosis, of whom, it is reported, 11 per cent were found to have active cases. In the future, the clinic will not conduct treatment but will urge the patients to consult their family physician, and the report of their examination will not be given to the patient but will be sent to the physician designated by the patient.——Dr. Elmer E. Francis has been elected president of the Memphis and Shelby County Medical Society for 1928; 149 members attended the annual meeting.

Abraham Flexner Lectureship at Vanderbilt.—Bernard Flexner, a New York attorney, has set aside securities, the income from which will yield $2,500 a year, to be held in trust for the creation of a lectureship at Vanderbilt University School of Medicine, Nashville, in honor of his brother, Abraham. Mr. Flexner is also prepared to provide $5,000 to enable Vanderbilt to inaugurate the series during the academic year 1928-1929. In making the gift, he said that he desired to perpetuate the association of his brother with the recent organization of the school of medicine of Vanderbilt University, and to stimulate education in that part of the country. The chancellor of the university, in accepting the gift, said, it is reported, that the first lecturer probably will be some European scientist, and that during the coming years this lectureship will attract the leading scientists of the world.

TEXAS

Osteopath Objects to Chiropractor's Sign.—The *Texas State Journal of Medicine* notes that G. M. Stephenson, an osteopath of Cisco, has requested the court to issue an injunction against one C. Jones of that city compelling him to remove a sign from in front of his office reading "Dr. Jones, Osteopathic, Chiropractic Masseur." Stephenson alleges that Jones is not an osteopath, and is not licensed to practice in Texas.

Personal.—Dr. Joel E. Wright has been elected president of the Brewster County Chamber of Commerce for 1928.——Dr. James M. Martin, Dallas, was chosen to represent the Radiological Society of North America at the Mexican National Medical Association meeting in Monterey, Mexico. ——Herrmann J. Muller, Ph.D., professor of zoology, University of Texas, Austin, has been awarded the $1,000 prize of the American Association for the Advancement of Science for a paper on "Effects of Roentgen-Ray Irradiation on Genes and Chromosomes."

Society News.—Dr. Joseph H. Dorman, Dallas, has been elected president of the Cotton Belt Surgeons' Association for 1928.——Among others, Dr. John W. Goode, San Antonio, addressed the Bee County Medical Society on "Nerve Block Anesthesia."——Dr. William B. Thorning, Houston, addressed the Bell County Medical Society, recently, on "Fractures of the Skull."——Dr. Lucius D. Hill, Jr., San Antonio, read a paper on "Mastoid Infection as a Cause of Digestive and Nutritional Disturbance in Infants" before the Bexar County Medical Society, Dec. 1, 1927; Dr. Charles E. Scull, San Antonio, was elected president of the society for 1928.——Dr. Eugene V. Powell, Dallas, read a paper before the Falls County Medical Society, Dec. 12, 1927, at Marlin, on "Thymic Dystrophy."——Dr. Charles T. Stone, Galveston, addressed the Harris County Medical Society, Dec. 7, 1927, on "Hyperthyroidism."——Dr. William H. Smith, Hondo, addressed the Medina-Uvalde-Maverick-Val Verde-E-R-K-Z Counties Medical Society, recently, on "Rattle Snake Bites," and Dr. Isaac Dudley Jackson, San Antonio, on "Cancer, A Constitutional Disease." Following the meeting, the members and guests adjourned across the Rio Grande to Piedras Negras and "enjoyed a splendid dinner."——Among others, Dr. Charles E. Hamner, Shreveport, La., addressed the Smith County Medical Society, Dec. 3, 1927, at Tyler, on "Interpretation of the Leukocyte and Differential Blood Count."——Dr. Frank D. Boyd, Fort Worth, has been elected president of the Tarrant County Medical Society for 1928.——Dr. James J. Terrill, Dallas, addressed the Wichita County Medical Society, Dec. 13, 1927, on "Pellagra."——Dr. David L. Bettison, Dallas, was elected president of the North Texas Medical Association at its ninety-fourth semiannual meeting, Fort Worth, Dec. 6-7, 1927.

GENERAL

Society News.—David F. Jones, Watertown, S. D., has been elected president of the American Pharmaceutical Association, and will be installed at the next annual meeting.——The annual meeting of the American Conference on Hospital Service will be held, February 7, at the Hospital Library and Service Bureau, 18 East Division Street, Chicago; the board of trustees will meet the previous day.

Four Weeks of Automobile Accidents.—The U. S. Department of Commerce announces that during the four weeks ending Dec. 31, 1927, automobile accidents were responsible for 623 deaths in seventy-six large cities of the United States, as compared with 518 deaths during the four weeks ending Jan. 1, 1927. Since May, 1925, the lowest total number of fatal accidents in these cities for a weekly period was 345 for the period ending March 24, 1926, and the highest number of fatal accidents was 681 for the period ending Nov. 5, 1927. For the fifty-two weeks ending Dec. 31, 1927, the total fatal accidents in these cities was 7,016, while for the fifty-two weeks ending Jan. 1, 1927, the total was 6,586, an increase of 5 per cent in one year.

Medical Personnel in the World War.—In an address given at the dedication of the honor room and unveiling of the World War Memorial Tablet by the Philadelphia County Medical Society, Philadelphia, Merritte W. Ireland, surgeon general, U. S. Army, is reported to have said that at the time of the Armistice, Nov. 11, 1918, there were on the rolls of the U. S. Army Medical Department 40,000 officers, 21,000 nurses and 281,000 enlisted men; of these, eighty-seven officers and 672 enlisted men were killed in action or died of wounds, and 419 officers, 204 nurses and 4,446 enlisted men died from disease and other causes, making a grand total of 5,828 members of the medical department who gave up their lives. At the beginning of the World War, the medical department comprised in round numbers only 980 officers, 400 nurses and 6,600 enlisted men.

International Congress of Psychology.—The ninth International Congress of Psychology will be held at Yale University, New Haven, Conn., probably in August or September, 1929. This will be the first meeting of the congress in America, the previous meetings having been held in Paris, 1889; London, 1892; Munich, 1896; Paris, 1900; Rome, 1905; Geneva, 1909; Oxford, 1923, and Gröningen, 1926. The president of the congress is J. McKeen Cattell, New York, and the vice president, James R. Angell, Yale University. The American officers and members of the national committee hope that the appointment of some foreigners for lecturers and lectureships can be arranged near the time of the congress, so that foreign attendance can be increased and international solidarity within psychology furthered. Most appointments of this kind at American universities would have to apply only to psychologists who speak English.

Medals for Accident Prevention and Health Work.—The American Museum of Safety and the American Electric Railway Association announce that Anthony N. Brady Memorial Medals have been awarded to the Louisville Railway Company, the El Paso Electric Company and the Tide Water Power Company of Wilmington, N. C., for accident prevention and health promotion work on electric railways for the year ending Dec. 31, 1926, during which the electric railway industry reduced its fatal accidents about 15 per cent; only one out of every 155,000,000 passengers carried was fatally injured. The bus systems included in the statistics covering the awards were those operated as part of an electric railway system. The Brady award, originated in 1914 and discontinued during the World War, comprises gold, silver and bronze medals as first prizes to three classes of companies operating more than five million, from one to five million, and less than one million vehicle miles. In announcing the awards, the president of the American Museum of Safety said that the studies made in connection with the award indicate a constantly growing regard on the part of the electric railway organizations for public and employee safety and health, as well as for the utmost efficiency in the operation of the service itself.

CANADA

Personal.—Dr. George H. Stevenson has been appointed superintendent of the Ontario Hospital, Whitby, Ontario, succeeding Dr. James M. Forster.——Dr. William T. Wilson, after thirty-two years of service in provincial institutions, has resigned as medical superintendent of the Ontario Hospital, Cobourg, Ont.——A tablet in memory of Sir William Osler was unveiled by the Hamilton Medical Society, Dec. 28, 1927, near his former home in Dundas, Ontario, at the easterly entrance to the town.

Association Appoints Associate Secretary.—Dr. George Harvey Agnew, Toronto, has been appointed associate secretary of the Canadian Medical Association, with particular reference to the establishment of a department of hospital service which was made possible by a grant from an insurance company. According to the Montreal *Star*, the association proposes to assist hospitals in Canada by way of advice and information. Dr. Agnew is a graduate of the University of Toronto Faculty of Medicine; he served in the World War, and has since been engaged in practice in Toronto.

Dr. Collip Succeeds Professor Macallum at McGill.—The retirement of Dr. Archibald B. Macallum, professor of biochemistry, McGill University Faculty of Medicine, Montreal, has been announced. Dr. Macallum's distinguished career began as lecturer in physiology at Toronto in 1886. He was appointed professor of physiology and biochemistry at Toronto in 1891, and professor of biochemistry at McGill in 1920. Dr. James B. Collip has been appointed to the chair. Dr. Collip, soon after obtaining his Ph.D. from the University of Toronto in 1914, was appointed lecturer in biochemistry at the University of Alberta, where he received his D.Sc. and, years later, an M.D. He was made one of the recipients of the sum of money accruing from the Nobel prize awarded in connection with the discovery of insulin and since then has done notable work on the parathyroid glands. Dr. Collip was one of Professor Macallum's students.

FOREIGN

Prize for Research in Anesthesia.—A prize of about $250 is offered by the *British Journal of Anesthesia* for the best research in anesthesia made in Great Britain during the coming year. This will be known as the Sidney Rawson Wilson Prize, in memory of the late Dr. Wilson.

National Epidemic Prevention Bureau of China.—There was established in Peking, in 1919, the National Epidemic Prevention Bureau for the purpose of research in communicable diseases, the manufacture of serums and vaccines and the standardization and examination of drugs. One hundred acres in the Temple of Heaven grounds was set aside for the bureau; some buildings were remodeled and new ones have been built, so that now there are special laboratories, a refrigerating plant, animal rooms, stables and special buildings for work on antiplague vaccine and tetanus antitoxin. The bureau has operated since 1921 on an annual appropriation of $112,872, which is paid from the customs administration; this is augmented now by receipts from the sale of the bureau's own products, which additional sum in the year ending Sept. 30, 1927, totaled almost $18,000. The bureau is under the ministery of the interior, and most, if not all, of the men who have been foremost in the development of its technical efficiency have been educated in the United States; there are nine members of the staff with medical degrees from the United States. The bureau is widely known among scientific circles, and the demand for its products has steadily grown. During the last year it sent out 139,530 cc. of diphtheria antitoxin, about 97,000 cc. of cholera vaccine, about 20,000 cc. of tetanus antitoxin and more than 27,000 cc. of typhoid vaccine. Most of the mission hospitals of China now get practically all such supplies from this source. The bureau does laboratory diagnostic work, and takes a most active part in the prevention of epidemics in China. The four men who are said to have been most actively associated with the technical development of the bureau and who studied in the United States are Drs. Tsefang F. Huang, Edgar T. H. Tsen, P. Z. King and M. Y. Dzen.

Deaths in Other Countries

Amand Jules McConnell Routh, consulting obstetric physician, Charing Cross Hospital and the Samaritan Free Hospital for Women, London, England, Dec. 18, 1927, aged 74; author of "Cases of Caesarian Section by Living Obstetricians in Great Britain and Ireland" and contributor to Albutt's System of Medicine.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Dec. 31, 1927.

Maternal Mortality Not Diminishing

A serious report has been presented to the ministry of health by Dame Janet Campbell, senior medical officer for maternity and child welfare, on the protection of motherhood. She finds that under present conditions child-bearing demands the sacrifice of about one maternal life in 250 births and that many other women suffer subsequently from injury directly due to childbirth. The most important cause of maternal mortality is puerperal sepsis, a preventable condition. Some reduction in its incidence has taken place since the beginning of the century, but during the past few years it has shown even a tendency to rise. Dr. Campbell holds that knowledge of the origin and spread of puerperal sepsis is still limited and inexact and that research is needed to establish its causation and to determine the best methods of prevention and treatment. She finds that most physicians have a limited first-hand acquaintance with the varied manifestations of puerperal sepsis. The training of the medical student and the midwife is still not wholly satisfactory, although much improvement has been effected in recent years. Opportunities for postgraduate experience of midwifery are most inadequate. The maternity service of the country needs strengthening and improving. Modification of the present maternity benefit under the insurance act, in such a way as to provide medical and nursing services in addition to cash payment, and the linking up of such service with materity and child welfare work, are recommended. Education of public opinion in the importance of the care of maternity is not altogether a simple matter, but something might be done through the medium of health and baby weeks by organizations concerned with the welfare of women and infant welfare centers.

To this important report Sir George Newman, the principal medical officer of the ministry of health, supplies an introduction. He regrets that there is little or no improvement in connection with puerperal sepsis and holds that there is no ground for supposing that maternal invalidity, an unmeasurable quantity, is declining. The still-birth rate remains at 3 per cent of the live births. The infant mortality rate in the first week of life, though slightly less, does not share in the remarkable decline of the total infant death rate under 12 months of age. Popular opinion attributes these results to bad housing, poor nutrition, physical weakness during pregnancy, insufficiency of midwives and physicians and lack of rapid communication, forgetting that within the last generation these matters have undergone immense improvement. Yet the mortality remains. We seem to have arrived at a position of temporary standstill. Sir George concludes as follows: "I cannot escape the conviction that if every maternal death was made the subject of competent and thorough medical scrutiny, with a report to the health officer or some appropriate tribunal—not with the object of criticism but with a view to the collection of facts—we should obtain a body of invaluable data on the cause of the mortality."

The Correlation Between Mental Ability and Physique in School Boys

Lecturing before the Royal Anthropological Institute, Dr. A. H. Mumford, medical officer of the Manchester Grammar School, discussed the relation between body measurements, respiratory tests and school progress. His investigations had enabled him to make a number of classifications of a physical kind, which he had correlated with the records of

school work. He found that boys winning scholarships at Oxford and Cambridge tended to display a somewhat accelerated physical growth when compared with the average boy. They also possessed a slightly better physical frame, as was shown by the fact that the acceleration in growth of the chest girth was slightly ahead of the acceleration in growth of height and weight. There was therefore fuller breathing capacity. The greater acceleration in growth of the chest girth was most marked among the boys winning first-class honors, and indicated that a high level of work could be maintained by these boys with less strain, the result of a combination of higher mental ability with a superior bodily physique. The acceleration in chest girth over that of height and weight was less marked where the boys did not attain such a high position. This indicates that among these boys the claims of study at times use up energy which might otherwise be used for physical development. A further attempt was made to discover whether the boys under consideration, besides displaying energy which could be directed toward successful study, also possessed in marked degree energy which could be used in physical activity; that is whether, taking the group as a whole, they showed special excellence in games and sports. A list was drawn up of all those boys who had been awarded "colors" for prowess in football, cricket, lacrosse, swimming or gymnasium work, or had gained merit at one or other of the major events at the athletic sports—for example, the mile, half-mile and quarter-mile races and steeplechase. The total list of colors thus awarded numbered approximately 500, and the winners in major events at the athletic sports nearly 200. There were thus about 700 chances of exhibiting special physical excellence for 7,000 boys; that is, one in ten. Seventy-three out of the 700 were gained by the group of 215 boys possessing special mental ability; i. e., one boy in three out of this scholar group also exhibited special physical excellence. When the group was considered from this point of view of prowess in games and sports, it was again found that the greater the degree of mental excellence, as judged by the class awarded, the greater the degree of physical excellence, as judged by the number of "colors" or the number of competitions won. For, out of the seventy-three awards obtained by the group as a whole, forty-five were awarded to the twenty-seven boys winning first-class honors, eighteen to the fourteen boys in the next group of honors, and only nine "colors" to the six boys in the third group. That is to say, one boy in four in the first-class group, one boy in five in the second-class group, and one boy in nine in the lowest group were awarded "colors." Moreover, in the first-class group, nine boys had shown special prowess in more than one physical activity, while in the second and lowest groups only two boys had obtained "colors" in more than one activity. These figures, Dr. Mumford asserted, tend to show that the growth of the human frame should be viewed as a unity and not as one of mind or body alone.

The Action of Drugs on Plants

The Indian scientist Sir Jagadis Chandra Bose, F.R.S., known for his demonstrations of circulatory reactions in plants, lecturing at the Bose Institute, Calcutta, declared that the effect of drugs on plants and animals had been found to be astonishingly similar. An extensive field of investigation had been opened by the discovery of numerous Indian plants, the medicinal property of which had never been suspected, and by the use of which the heart machine can be regulated and rendered efficient. The action of a drug was first discovered from its effects on the pulsating tissue of the plant. An identical drug was then applied on the animal heart. A large number of Indian plants had been discovered having characteristic medicinal properties which had not hitherto been suspected. The efficacy of some of these was far greater than any drugs in use. Investigations would no doubt lead to a new pharmacopeia for the relief of humanity and the establishment of a vast industry in the utilization of indigenous plants for medicinal purposes.

Conference on "Light and Heat in Medicine"

The first international conference on light and heat in medicine, surgery and hygiene, organized by the *British Journal of Actinotherapy*, has been held in London. The conference was opened by Dr. F. E. Fremantle, M.P., who referred to the enlarging field of actinotherapy, and especially the lead given to other countries by British physicians and scientists and the danger in untrained hands of the increasingly powerful arc and mercury vapor lamps. The sessions were well attended, some of them crowded, though invitations had been issued only to physicians and to others interested in the subject professionally, such as nurses engaged in the administration of light treatment under medical supervision.

Dr. L. G. Dufestel read a paper on contraindications for ultraviolet therapy. He said that great caution was necessary in pulmonary tuberculosis. Old persons with rigid arteries, patients with acute or chronic nephritis, and patients with uncompensated myocarditis ought not to be irradiated. Certain skin diseases, such as acute eczema or lesions with bullae, might be aggravated. Contraindications might appear only after preliminary treatment—for example, cases of tuberculosis, in which the result of light treatment was the rapid appearance of intense pigmentation with a fall of blood pressure. Nervous patients too were made worse by the treatment.

Dr. Albert Eidinow described some recent advances in actinotherapy. He found that ultraviolet radiation on the bactericidal power of the blood increased to the maximum extent with a minimal erythema dose of light and irradiation of an area corresponding to one sixth of the surface area of the body. He used lamps emitting shorter rays than 2,970 angstrom units, exposing to a minimal erythema dose twice or thrice a week successive areas about one sixth of the body surface, and allowing an interval of from ten to fourteen days before returning to the same area.

Dr. F. Hernaman-Johnson dealt with light in combination with other remedies. Most therapeutic agents acted by stimulating the natural defensive powers of the body, and the benefit from the carbon arc was similar to that from natural sunlight. Failing the carbon arc, a kind of synthetic sunlight might be produced by high candle-power incandescent lamps and nonerythema-producing rays from mercury vapor. He said that light treatment could imitate, at least in some degree, the effects of many drugs. It could take the place of iron and arsenic in anemia and debility, of strychnine as a tonic, and, in a little time, it might even render the use of such things as headache powders unnecessary.

Dr. F. Howard Humphris discussed the parts played by the chemist and physicist in actinotherapy, and prophesied that more would be discovered about the specific therapeutic effects of different wavelengths of light and that the present clumsy method of using the whole light from any source would be abandoned. The wavelength of the light required for any particular treatment would be isolated by means of filters, which could at the same time serve as a protection to the patient. At present he thought that such filters as existed in the ultraviolet region of the spectrum were rudimentary. A filter might yet be devised that would "cut out the sunstroke-causing rays of Hindustan and give only the healthful rays of Honolulu."

Prof. I. M. Heilbron described the irradiation of foodstuffs and the relation thereto of vitamin D. It had been discovered that cholesterol itself was not a provitamin but contained a

minute quantity of another substance readily detected by the spectroscope, to which the antirachitic properties were attributable. The provitamin was probably identical with ergosterol, a substance present in large amount in yeast and in a small amount in human and in animal skin.

PARIS

(From Our Regular Correspondent)

Dec. 28, 1927.

Right of Privileged Communication

French law provides that a physician must keep absolutely secret everything that his patient confides to him and also everything that his profession has revealed to him. To be sure, medicolegal experts appointed by the courts to throw light on an affair are excepted; also physicians of life insurance companies, and physicians charged by the police or by the patient to certify to lesions resulting from an accident. Such certificates, which, in reality, violate the right of privileged communication, cause no harm to the patient, as their contents are known only to the lawyer and to the court, and, furthermore, have to do only with wounds and avowable diseases. But the proposed law pertaining to social insurance will compel physicians to make out certificates concerning all sorts of disorders, including venereal diseases, tuberculosis, cancer, insanity, alcoholism and the like. They may harm the patient and his descendants and will be drawn up in multiple copies, which will circulate in the administrative bureaus in connection with the adjustment of various matters. Herein lies one of the most effective arguments that the medical profession can bring up in opposition to the drafted law, because it will appeal to the general public. Also M. Balthazard, professor of legal medicine at the University of Paris, who has headed the movement against the law, has brought the question before the bar of opinion by speaking before the academy. His chief purpose was to show that the principle of professional secrecy is incompatible with the proposed law.

Creation of an Anticancer Center in the Suburbs of Paris

Paris and many of the large cities of the provinces are provided with anticancer centers. A special center has become necessary for the suburbs about Paris and the adjoining departments. Special services to ferret out new cases have been organized (in the nature of dispensaries for early diagnosis and the selection of patients); also centers for secondary treatment, solely surgical. For treatment by radium, roentgen rays, and also for surgical treatment, patients of the suburbs and the outer departments are directed to the center at Villejuif. In the suburbs of Paris, propaganda has been begun by means of posters. Professor Roussy, director of this center and of that of Paris, proposes a more active campaign by organizing, in each of the large communes, and with the aid of the mayors who will consent to assist him, evening consultations with a view to ferreting out as many cancers as possible right at the start. The Institut du cancer, approved by the general council in 1925 and under the authority of the Faculté de médecine of Paris and the management of Professor Roussy, is now in operation.

The Mortality Among Abandoned Children

In Paris and the surrounding region, children abandoned by their parents usually are turned over to the care of the Assistance publique by the parents themselves. There is a considerable number of them, and the mortality among them has always been high. They have been sent into the rural districts as soon as they could be transported with safety—often during the first days of their existence, and have been placed in the care of peasants, who raise them for a modest sum. In spite of periodic supervision by physicians charged with the inspection of these children, they are usually poorly nourished and receive inadequate hygienic oversight. The result is that a large number rapidly succumb to various children's diseases. The mortality among these children, before the war, was 16 per cent for those who were breast-fed, and from 35 to 40 per cent among those who were bottle-fed. The present director of the Assistance publique, M. Mourier, has recently made some far-reaching changes in this defective system by creating care-taking centers and by training special professional nurses for such service. Groups of from fifty to eighty children are placed first in urban centers and are later transferred to rural districts, where they are under the supervision of a physician who visits them every ten days as a routine, and oftener in case of disease. In addition, a visiting nurse is engaged to visit them every two days. On the whole, the creation of these care-taking centers in which the child receives only rigidly sterilized milk has brought about a marked lowering of the mortality. The system has recently been further improved by the creation of an intermediary center for those children who are born with some defect, which is so frequently the case. Since this combination of the nursery idea with the care-taking center was introduced, the mortality of the young wards of the department of the Seine has been lowered, this year, to a figure heretofore unknown; namely, 12 per cent, which coincides with the average mortality of children of like age throughout the country.

A Resolution of the Academy of Medicine in Favor of Antidiphtheritic Vaccination

Diphtheria having been widely prevalent the past year, and serotherapeutic treatment having given inadequate results in the severe cases, by reason of the extreme frequency of the association of the streptococcus with *Bacillus diphtheriae*, the Academy of Medicine has passed a resolution to be transmitted to the minister of health urging that preventive vaccination among school children be introduced on a large scale. Therein is recommended the use of Ramon's anatoxin, which has been found to be both effective and harmless wherever it has been used.

GENEVA

(From Our Regular Correspondent)

Dec. 26, 1927.

Effects of White Lead

Mr. Kohn-Alrest, director of the laboratory of toxicology of the city of Paris, recently addressed the Geneva Medical Society on "The Effects of White Lead on the Human Organism." The lecturer showed that pigments having a zinc basis, when properly crushed, are quite as advantageous as lead pigments. The amount of oil used for both zinc and lead is the same. Zinc soaps are quite as insoluble as those of lead; therefore the supposed superiority of white lead in resisting atmospheric conditions is inexact. The covering power of zinc is as good as that of lead, and it is only in damp and sulphurous atmospheres that lead holds better than zinc. Even this is not susceptible of absolute proof.

In France, white lead has been discarded for the past twenty years, and in Holland and England experiments have been made without disclosing any disadvantages of zinc. The lecturer stated that the labor conference admitted that 2 per cent lead mixed with zinc paint was devoid of danger. Zinc is present in foods—in oysters and in bread—and does not cause poisoning. In France, lead poisoning has dropped from 20 per cent to 1 per cent and the cases that occur are not in painters but in certain workers in metal and in the manufacture of accumulators.

Although white lead is used in Switzerland, cases of lead poisoning are almost never seen. A building contractor told

a physician that zinc pigment is used for painting rooms because white lead turned yellow, but for outside painting lead pigment is used because it alone resists inclement weather.

Treatment of Infantile Paralysis

At the recent Congress of Pediatrics held at Lausanne, Professor Nicod, of that city, read a report on the orthopedic treatment of infantile paralysis. It is necessary to prevent defective position of the limbs. Therefore treatment should be commenced from four to six months at the latest after the attack of poliomyelitis. The chief indication is to preserve passive mobility having the same extent as normal movements. In this way the normal joint and the muscular and tendon arrangements may be preserved for the time when voluntary motility returns. In the acute phase the only treatment is to prevent deformities according to the patient's tolerance. After the subject has been paralyzed for about fifteen years, either the slow nonoperative method or the operative method may be employed. Both may be used for the same patient. The nonoperative treatment begins with ten days' treatment with heliotherapy, massage and corrective manipulations, progressive extension, in plaster casts and, when the deformity has been overcome, physical therapy and reeducation is resorted to. Nicod appears to think that in the great majority of cases operation is a makeshift and is to be done only on subjects whose growth is about complete. When the paralytic deformities have been corrected, intensive physical therapeutics are to be employed progressively to improve muscular functions. This may require years, and the object of the treatment is to do away with all types of apparatus. Nerve grafts are not practical because the muscle fibers, when not too greatly degenerated, recover their function by simpler means. Arthrodesis is especially successful in the knee. The two principal and useful operations are the triple tibiotarsal subastragal and mediotarsal arthrodesis, on the one hand, and double subastragal and mediotarsal arthrodesis, on the other. In paralytic flail shoulder there is no orthopedic appliance that can compare with arthrodesis, which leaves all the movements of the scapula intact.

International Standards in Drugs

The federal council has decided to ratify the draft of the international arrangement, signed at Brussels, concerning the unification of the formulas of "heroic" medicaments and unification of the pharmacopeias. The "heroic" medicaments belong to the families of aconite, belladonna, digitalis, colchicum, opium, morphine, codeine and the arsenical, iodine and mercurial preparations. This unification of the formulas and the standardization of these active drugs permits uniform preparation in twenty-two countries in Europe, Argentina, Cuba, Egypt, Japan, Turkey and the United States.

Psychotechnics

Mr. A. Carrard of the Federal Polytechnical School of Zurich recently delivered a lecture in that city on "The Importance of Natural Aptitudes in the Choice of an Occupation." The Zurich Psychotechnical Institute, founded a few years ago, has the triple object of examination of the individual's natural aptitudes, selection of professional studies, and the formation of psychotechnicians for teaching and practical work.

The institute tries to discover whether the subject examined is inapt for certain work, whether he can undertake any kind of work or whether he possesses certain exceptional qualities. Usually one is dealing with young persons about to graduate from one school to enter another or to begin an apprenticeship, but the institute also gives advice in case of change of profession or a new distribution of work. Many firms will not engage any one who has not passed the examination of the institute. The apprentices of the federal postoffices, street car drivers and future police officers of the city of Zurich undergo this examination. In its present state the Zurich institute seems more especially equipped for the examination of future laborers rather than executives. Yet the directors of an important concern submitted themselves to the test and from the results obtained had the method employed for every one in the concern. Admitting that the results of the institute are 100 per cent, it is still to be feared that the interpretation of its certificates may result in mistakes on the part of the concern interested.

ITALY

(From Our Regular Correspondent)

Dec. 7, 1927.

Convention of the Italian League for Combating Cancer

The Lega italiana per la lotta contro il cancro held recently at Milan its first national convention.

STATISTICS ON CANCER IN ITALY

The paper on the first main topic, "Cancer Statistics of Italy," was presented by Prof. Alfredo Niceforo, who gave the results of the special inquiry instituted by the League of Nations on the number of deaths in Italy from malignant tumors. The results were grouped by the speaker under five heads: men—all types of involvement; women—breast involvment; women—uterus involvement; women—other localizations; women—total number affected. Metastases were noted in 38 per cent of the interventions in males; in 57 per cent in females; in 8 per cent in women—breast involvement, and in 52 per cent in women—uterus involvement. The average interval that elapsed after the surgical intervention before the metastasis appeared was 5.28 months in men and 8.04 months in women. The frequency of recurrence after surgical intervention was 41 per cent in men and 49 per cent in women. The recurrence developed, on the average, from five to ten months after the intervention.

PUBLICITY METHODS IN THE CRUSADE AGAINST CANCER

In presenting his paper on the second main topic, "Publicity Methods in the Crusade Against Cancer," Prof. Enrico Ronzani emphasized the need of coordination between scientific propaganda and the institution of centers of diagnosis and gratuitous treatment. He made several suggestions, among which were the following: the creation in all the provinces of the kingdom of chapters of the Lega contro il cancro, which should keep in close touch with the physicians and with the various sanitary associations; the intensification of the hygienic supervision of laboratories and the industries that predispose to malignant tumors; the diffusion among physicians of articles and monographs on cancer, especially with regard to early diagnosis and the various methods of performing a biopsy; the organization, each year, of a "short course in cancer," consisting of theoretical and practical lectures for physicians and students of medicine, and ample distribution among the civil authorities, and directly to the public, of tracts, pictures, circulars and other publicity material prepared by the national league.

CENTERS FOR DIAGNOSIS

Professor Morpurgo presented the third main topic, "Centers for Diagnosis." He discussed the constitution and functioning of the centers, which should have clinical, radiologic and histologic departments. The work of the surgeon, the radiologist and the pathologist should be developed in group fashion in a special ambulatorium and separately in as many specialized sections. The ambulatorium should be established on a gratuitous basis, being attached to a hospital with specialized departments for the treatment of tumors, and should function also as an admission office for patients

who desire to be hospitalized. The personal and clinical histories of patients visiting the ambulatorium will be preserved in special files.

AID TO CANCER PATIENTS

The fourth main topic, "Aid to Cancer Patients," was presented by Prof. Gaetano Fichera, who brought out the financial side of the problem. It would be necessary for the government to grant more than two and a half millions, which sum was appropriated for the current year, and for all classes to become enrolled in societies entailing the obligation of undergoing periodic examination. In every cancer center there should be a group of visiting nurses. There should be established either a specialized service for cancer under the administration of the Direzione generale di sanità, or a commissione superiore dei tumori.

SUPERVISION OF RADIOTHERAPY AS APPLIED TO CANCER

The fifth main topic, "Supervision of Radiotherapy as Applied to Cancer," was introduced by Professor Perussia, who gave his recommendations in the form of a resolution. In the resolution it is affirmed that the application of radiotherapy in cancer can be carried out in ordinary clinics and hospitals, provided they are subject to proper supervision. The speaker urged the government to introduce legislation limiting to true radiologic specialists the privilege of applying roentgen-ray and radium therapy to malignant tumors.

Compulsory Insurance Against Tuberculosis

A decree has been published that makes insurance against tuberculosis compulsory for persons of both sexes who are insured against invalidity and old age; likewise for seamen who contribute to the Cassa degli invalidi of the merchant marine.

BELGIUM

(From Our Regular Correspondent)

Dec. 9, 1927.

A National Fund in Support of Scientific Laboratories

Nov. 26, 1927, the meeting called by the Hoover Foundation for the purpose of organizing a movement in favor of university laboratories was held in Brussels. M. Brachet, prorector of the University of Brussels, stated that one scarcely ventures now to encourage a young man to engage completely in a scientific career. While scientific research affords joy to the investigator, there is a shadow in the picture, which becomes more and more ominous with advancing age. At present professors are often obliged, in order to live, to do outside work that is devoid of interest, which often has the effect of sterilizing their scientific activities.

M. Van Zeeland, of the University of Louvain, and Professor Pirenne, in the name of the national universities, emphasized the necessity of endowing the scientific laboratories.

Drawing from these addresses practical conclusions, the king has announced the creation of the Fonds national de la recherche scientifique, which will be independent in the main, though under the general control of the Fondation Universitaire. A special commission will be formed, on which will serve, in addition to the delegates of the Fondation Universitaire and of the higher institutions of learning and research, representatives of the various industries, banking institutions, and the principal contributors to the national fund. Already a number of subscriptions amounting to more than a million dollars have been offered.

The Prenuptial Examination

Several references have been made to the efforts to solve the serious question of prenuptial examinations. The problem is being gradually taken out of the hands of the medical profession and transferred to the general public. The practical realization of the idea appears to be nearer at hand. At the general convention of the Association catholique de la jeunesse belge, held at Liége, Aug. 27 and 28, 1927, and representing a group of 60,000 young people belonging to the various social classes of our country, a resolution was passed which emphasized the great importance of physical health, favored the idea of prematrimonial medical consultations, and, in general, expressed a preference for the union in marriage of persons belonging to the same social class, in order to assure permanent psychologic harmony between husband and wife.

Penetrating Telecurietherapy

Reference has been made (THE JOURNAL, Aug. 6, 1927, p. 463) to the method of "penetrating telecurietherapy" advocated by Dr. Cheval. He had shown that by using 4 Gm. of radium highly filtered and placed at a distance of 12 cc. from the skin surface it is possible to irradiate conveniently and uniformly large areas of the body and thus reach all the field presumably invaded by the elements of a cancerous neoplasm.

The author has recently submitted to the Academy of Medicine of Belgium a second report on penetrating telecurietherapy in the treatment of malignant tumors—sarcomas and cancers of the head and neck—in which he emphasizes, on the basis of his comprehensive personal observations, the superiority of this method over other procedures heretofore in vogue, from the double standpoint of safety and efficacy.

Medical Consultations at Sea by Wireless

Reference has been made to the several stages in the organization of medical consultations at sea by wireless, in which Belgium has taken the initiative. The details of the organization and mode of functioning of such consultations have just been published.

Radiograms intended for such service may be transmitted to the wireless postal station and should be addressed: Radio Médical Anvers Radio. The prefix S. V. H. will be used to assure priority over all other communications except an S. O. S. appeal. The medical radiogram will be signed by the captain and will begin with a reference to the medicine chest that the vessel possesses; for example, "Belgian medicine chest," "English medicine chest," and the like. The Belgian Military Hospital at Antwerp, which will be asked to give consultations by wireless, possesses a list of the supplies contained in the regulation medicine chests of the merchant marines of the various maritime countries: Australia, Belgium, Denmark, France, Great Britain and Ireland, Netherlands, Norway, Spain, Sweden and the United States.

The medical radiogram will describe concisely all symptoms of the patient. It is desirable to mention the age of the subject, the date of the accident or the beginning of the disease, the temperature, the pulse, the general condition, and the position of the patient. In case of disease, more particularly, mention should be made of the condition of the tongue, and, possibly, the nature of the respiration, vomitus, stool and urine. It should be stated also whether the patient has been previously affected with any tropical disease; whether he has been recently exposed at suspected ports or contaminated by exotic or infectious diseases. In case of a burn, one should state the site, the extent and the depth. In case of supposed fracture, information should be supplied as to the deformation of the member, swelling of a joint, and as to the possibility or absolute impossibility of moving the member.

The medical radiogram may be written in French or Flemish, and, if necessary, in the English language. Replies will be sent in the language of the message of appeal when that is French or Flemish. In case English is used, an immediate response in that language cannot be guaranteed.

No charges are made for the transmission of the message of appeal, for the response, or for the consultations properly so called. This service has been functioning since Nov. 1, 1927. Ships of all nationalities may take advantage of this service. Notice of the creation of the service has been sent to the Bureau de l'union télégraphique in Berne, Switzerland, and to the marine services of all countries.

PRAGUE

(From Our Regular Correspondent)

Jan. 1, 1928.

Medical Progress in 1927

In Czechoslovakia during the past year there was slow but steady progress. At the beginning of the year the country was swept by an influenza epidemic of high morbidity but low mortality. Nevertheless it caused a rise in the general and infant mortality rates. The tuberculosis death rate has shown an increase, which continued from the previous year. While actual retrogression in the tuberculosis situation cannot be eliminated as a cause, one part of the increase can be attributed to the fact that, in the last years of the war when the tuberculosis mortality was high, most of the tuberculous people died. Consequently their deaths did not occur in the following years and the tuberculosis death rate became low. Naturally, with a new generation of the tuberculous the rate climbs again. Scarlet fever has occurred in considerable epidemics with fairly high mortality. The same thing holds for whooping cough. Infantile paralysis, which was rare in this part of the world and which has never appeared in epidemic form before, caused considerable alarm among the population in the late fall months. As the disease under the epidemic law was added to the list of notifiable diseases only lately, reliable reports are not available. Some believe that the disease will appear in epidemic form next spring. The public health service has not undergone significant changes. The financial consolidation of the country did not allow great additions to public expenditures. General hospitals have been operating under fairly good financial conditions and several important building improvements have been carried out. Changes in the teaching staffs of medical schools are strikingly shown on the Czech medical faculty in Prague. Some older men have died and several new men have appeared. The medical faculties in Brno and Bratislava do not show so many changes because they are staffed by younger teachers than the old faculty of Prague. An improvement has taken place in the regulation of the working conditions of hospital nurses. While this is confined at present to state hospitals, it will undoubtedly be applied to other public hospitals. Among the activities of private health organizations, the consolidation of social and public health agencies should be mentioned. The result of the reporting of venereal diseases for 1926 shows a considerable decline in their incidence. The Czechoslovak Public Health Association, which existed before the war and which ceased its activities during the war, has been revived. International congresses concerning tobacco, flour and bread manufacture have been held in Prague. The sickness insurance bodies have been in poor financial condition. This has resulted from the devastation of their reserve funds through the influenza epidemics and from the introduction of invalidity and old age insurance, which have led to a reduction of the fee to be paid for sickness insurance. The insurance bodies have enforced strict economy, which reflected itself of necessity in the remuneration paid to physicians for their services.

Care of Patients with Chronic Diseases

According to present legislation, patients with chronic disease are not admitted to hospitals for acute and curable diseases because of the limited availability of hospital beds. It is impossible, however, to enforce this measure. According to present laws, the communities are responsible for the care of chronic patients. As a result, indigent chronic patients are placed in poorhouses, where there is usually no provision for the treatment of the sick. In several instances, counties have built special institutions for the treatment of the chronically ill. Such institutions have constantly a long waiting list. An investigation in the province of Bohemia has brought out that, of the forty-seven institutions of this sort which exist in that province, only twenty-six have physicians on their staff and thirty-nine are without any medical equipment. Twenty-four of these institutions have no trained nursing service. Only a few of them have laboratories, roentgen-ray apparatus and the necessary equipment for physical therapy. Interest in this class of patients has been aroused by the results secured in the clinic for the chronically diseased which was established about a year ago in connection with the Czech medical faculty of Prague. It has been demonstrated there that it is possible through modern therapy, especially physical therapy, to improve the condition of most chronically ill patients.

National and International Conferences

The first international conference of social work will take place in July in Paris. As Dr. Alice Masaryk, the president of the Czechoslovak Red Cross, has been designated as the president of the conference in Paris, she has given initiative to a similar conference to be held in Prague prior to the international conference in Paris. It is intended through the national conference to prepare the ground for the international discussions to follow. At the Prague conference three main problems will be discussed. The first topic will deal with the foundations for an effective social and public health program. The second topic will be a discussion of the relationship of social work and public health work to social insurance, and the third discussion will deal with the public health and social aspects of the new reform of public administration which is being carried out in the country.

The High Tatra

The Tatra Mountains in the province of Slovakia present unusually favorable climatic conditions for recreation and for the treatment of tuberculous patients. There was no plan for the use of this territory, and patients with open tuberculosis began to crowd out visitors coming to the Tatras for recreation or for the treatment of diseases other than tuberculosis. In order to remedy this situation, a bill has been prepared which provides for division of the whole Tatra region into parts which have the most favorable conditions, respectively, for the treatment of tuberculosis, the treatment of other diseases, and for recreation. In order to prepare a foundation for this development, a public health demonstration has been inaugurated among the population of the region. Special attention is being paid in the demonstration to a safe milk supply because this is one of the chief objections which the visitors of the region have voiced.

Prostitution

A study of prostitution in Prague since brothels have been abolished has been published lately. Prostitution found its way into bars and saloons, where it is difficult to combat. Otherwise prostitution did not change in character very greatly. The study is based on the analysis of 627 cases. Only 13.4 per cent of the girls come from illegitimate parentage. In 62 per cent of cases they come from cities, while previously prostitutes came chiefly from rural communities. Tuberculosis was frequent in the families or in the girls themselves. This of course reflects the conditions which prevailed in the general population in postwar times. The school education of the girls was fairly complete. Deso-

late conditions have been revealed in the family life of the girls. If cases of mental abnormality are omitted, the breaking up of the families which was caused by the war appears to be the chief inducement to prostitution.

BERLIN

(From Our Regular Correspondent)

Dec. 24, 1927.

The Vitamins of Cod Liver Oil

According to Professor Kestner, physiologist of Hamburg, in the Far North, under all meteorological conditions, the ultraviolet radiation is stronger than in central Europe. That explains in the main the unusually rapid development of plants in the short summer of the Far North and also the storage of vitamins. The sea plants store up the vitamin in relatively large quantities, owing to the highly potent radiation. These are eaten by small animals, and these in turn by other animals, and the cod preys on them all. Thus the liver of the cod becomes the reservoir in which all the fat-soluble vitamins of the masses of devoured sea plants are deposited.

The Late Effects on the Children of the Food Scarcity During the War

In the current number of the *Archiv für soziale Hygiene*, F. Hoppe, school physician of Berlin-Charlottenburg, publishes a study on the late effects on children of the food scarcity during the war period, in which he reaches the following conclusions: In certain circles children of the war period present evidences of bodily inferiority that have a causal connection with the undernutrition of that epoch. As the effects are still observable in juveniles who are past 17 years of age and thus have passed through the more significant portion of puberal development, there is little prospect of these being entirely "outgrown." These belong, as it was discovered on investigation, to certain definite age groups. It has also been shown that it was precisely their age at the time of the greatest food scarcity that made these juveniles more susceptible and less resistant. The results of the investigation make it appear likely that around the ninth and the tenth year of life the resistance declines temporarily with a certain regularity, doubtless owing to definite physiologic processes. The theory is set up, thus far, only with reference to the boys, and awaits confirmation.

Marked Decline of the Excess of Births Over Deaths

In the first quarter of 1927, the excess of births over deaths in the German *reich* showed a marked decline. According to a report of the federal bureau of statistics, as contained in "Wirtschaft und Statistik," the excess of births over deaths for the first quarter of 1926 was 116,257, but for the first quarter of 1927 it dropped to 74,091. The excess of births over deaths declined, therefore, from 7.4 per thousand population in 1926 to 4.7 per thousand in 1927, which represents a decrease of 36 per cent. This unfavorable result is due, in part, to the fact that the general mortality has risen.

The Increase of Quacks in Prussia

The number of quacks registered with the *Kreisarzt* (township physician) in Prussia during the period 1921 to 1926 was as follows: 1921, 4,485 quacks; 1922, 5,310; 1923, 5,063; 1924, 5,648; 1925, 6,182, and 1926, 6,410. The quacks are recruited from every imaginable walk of life. The circle of their activities has likewise become extended during recent years. For the year 1926 no less than 113 special therapeutic methods were duly reported by quacks. It goes without saying that the actual number of quacks is greater than the figures show, as many fail to register with the *Kreisarzt*, in spite of the official requirement.

Marriages

ANDREW STUBS DAVIS, Oakland, Calif., to Miss Irene Louise Leonard of Chincoteague, Va., at Reno, Nev., Dec. 29, 1927.

JAMES A. DOLCE, Long Island City, N. Y., to Miss Cecile J. Noqué of Woodside, Dec. 21, 1927.

GEORGE A. M. EYCHANER, Omaha, to Miss Elizabeth Huessner of Marlette, Mich., recently.

AUGUST HENRY ARP, Moline, Ill., to Miss Elsa Mauritzson of Rock Island, Dec. 26, 1927.

HERSCHEL B. MORTON, Doniphan, Neb., to Miss Lucy Leigh of Omaha, Nov. 2, 1927.

Deaths

Newton Melman Shaffer ✠ New York; Medical Department of the University of the City of New York, 1867; emeritus professor of orthopedic surgery, Cornell University Medical College; at one time clinical lecturer and clinical professor of orthopedic surgery at his alma mater; first chairman of the Section on Orthopedic Surgery of the American Medical Association, 1912-1913; past president of the American Orthopedic Association; founder and consulting surgeon to the New York Orthopedic Hospital for Children, West Haverstraw, N. Y., and consulting surgeon to St. Luke's Hospital, New York; formerly on the staffs of the Presbyterian Hospital and the New York Dispensary and Hospital; author of "Selected Essays on Orthopedic Surgery"; aged 81; died, January 2, at St. Luke's Hospital, of cerebral hemorrhage.

Charles Ransom Woodson ✠ St. Joseph, Mo.; Missouri Medical College, St. Louis, 1872; formerly professor of neurology and psychiatry, Ensworth Medical College; member of the House of Delegates of the American Medical Association from 1910 to 1913 and in 1920 and 1921; past president of the Missouri State Medical Association; member and past president of the American Psychiatric Association; bank president; for seventeen years superintendent of the State Hospital, number 2; proprietor of a sanatorium bearing his name, where he died, Dec. 30, 1927, aged 79, of cardiorenal disease.

Samuel Sherwell, Brooklyn; Bellevue Hospital Medical College, New York, 1868; member of the Medical Society of the State of New York; emeritus professor of dermatology at the Long Island College Hospital; veteran of the Franco-Prussian War; on the staffs of the Methodist Episcopal Hospital, the Brooklyn Hospital, the Brooklyn Eye and Ear Hospital and the Long Island College Hospital; aged 86; died, Dec. 21, 1927, of carcinoma of the rectum.

James Homer Wright ✠ Boston; University of Maryland School of Medicine, Baltimore, 1892; assistant professor of pathology, Harvard University Medical School, and the graduate school; for many years director of the pathologic laboratory, and consulting pathologist to the Massachusetts General Hospital where he died, January 3, of lobar pneumonia, aged 58.

William Houston Littlepage ✠ Washington, D. C.; George Washington University Medical College, Washington, 1905; formerly clinical instructor in medicine at his alma mater; veteran of the Spanish-American and World wars; on the staff of the Emergency Hospital; aged 48; died, January 8, at the United States Naval Hospital, of chronic nephritis.

Edward Burnside Simmons, Worcester, Mass.; Columbia University College of Physicians and Surgeons, New York, 1913; member of the Massachusetts Medical Society; also a clergyman; served during the World War; formerly on the staff of the City Hospital; aged 45; died, January 7, of pulmonary tuberculosis, diabetes mellitus and nephritis.

William Laing Somerset, New York; Columbia University College of Physicians and Surgeons, New York, 1892; member of the Medical Society of the State of New York; diagnostician of the New York Health Department; aged 66; died, January 11, at St. Mark's Hospital, of thrombosis, while undergoing an operation for appendicitis.

David Friedlander ✠ San Francisco; Cooper Medical College, San Francisco, 1898; formerly lecturer of dermatology at his alma mater; member of the American Urological

Association; aged 50; on the staff of Mount Zion Hospital, where he died, January 8, of arteriosclerosis and cerebral hemorrhage.

Charles Milton Morgan, Chandler, Okla.; University Medical College of Kansas City, Mo., 1906; member of the Oklahoma State Medical Association; formerly secretary of the Lincoln County Medical Society; aged 54; died, Nov. 6, 1927, at Tucson, Ariz., of pulmonary tuberculosis.

Herbert G. Tureman ✠ Kansas City, Mo.; University Medical College of Kansas City, 1897; member of the American Academy of Ophthalmology and Oto-Laryngology; on the staffs of the Research and St. Luke's hospitals; aged 52; died, January 1, of heart disease.

James Emmett Luckenbaugh, Palmyra, Mo.; University Medical College of Kansas City, Mo., 1901; aged 57; died, Dec. 31, 1927, at the Blessing Hospital, Quincy, Ill., of acute dilatation of the stomach, following a cholecystectomy and an appendectomy.

Charles Merkel Niesley ✠ Manhasset, N. Y.; University of Pennsylvania School of Medicine, Philadelphia, 1890; formerly served as chairman of the local district school board; aged 62; died suddenly, January 3, in Atlantic City, N. J., of heart disease.

William L. Haynes, Calhoun, Ky.; Memphis (Tenn.) Hospital Medical College, 1888; member of the Kentucky State Medical Association; health officer of McLean County; aged 64; died, Dec. 30, 1927, of chronic nephritis.

Floyd Bonesteel Ennist, New York; Columbia University College of Physicians and Surgeons, New York, 1896; Bellevue Hospital Medical College, New York, 1896; aged 57; died, January 3, of carcinoma of the intestine.

Edgar Potter Orvis ✠ Buffalo; University of Buffalo School of Medicine, 1919; member of the American Urological Association; secretary of the Erie County Medical Society; aged 32; died, Dec. 29, 1927, of heart disease.

Arthur H. McCrory, Bucyrus, Ohio; Columbus Medical College, 1883; health officer of Bucyrus; for many years president of the school board; aged 69; died, January 4, of myocarditis and arteriosclerosis.

Samuel Spurgeon Montague, Oxford, N. C.; Jefferson Medical College of Philadelphia, 1910; served during the World War; aged 39; died, Dec. 13, 1927; at the Brantwood Hospital, of tuberculous pneumonia.

Presca Isaac Edwards ✠ Jackson, Mich.; University of Michigan Medical School, Ann Arbor, 1889; formerly on the staff of the W. A. Foote Memorial Hospital; aged 68; died, Dec. 27, 1927, of myocarditis.

Ralph J. F. Burton, Depauville, N. Y.; Victoria University Medical Department, Toronto, Ont., Canada, 1882; aged 69; died, Dec. 31, 1927, at the House of the Good Samaritan, Watertown, of myocarditis.

Walter Kirker Beatty, Delhi, Calif.; Medical Department of Columbia University, Washington, D. C., 1894; veteran of the Spanish-American War; aged 57; died, January 1, of Raynaud's disease.

Otto A. Thomas, Syracuse, N. Y.; Syracuse University College of Medicine, 1885; formerly city health officer; aged 70; died, Dec. 27, 1927, of arteriosclerosis and myocarditis.

Richard Andrew Wilson ✠ El Paso, Texas; University of Nashville Medical Department, 1896; formerly city health officer; aged 57; died, January 5, of a self-inflicted bullet wound.

August Soffel ✠ Pittsburgh; Western Pennsylvania Medical College, Pittsburgh, 1894; served during the World War; aged 54; died, Dec. 30, 1927, of carcinoma of the descending colon.

John Clinton Patterson ✠ Burley, Idaho; University of Colorado School of Medicine, Denver, 1903; aged 47; died, Nov. 10, 1927, of peritonitis, following perforated duodenal ulcer.

Cyrus Hugh Linn ✠ Kuttawa, Ky.; Bellevue Hospital Medical College, New York, 1891; president of the Lyon County Medical Society; aged 65; died, January 1, of colitis.

Louis William Oster ✠ Cleveland; Western Reserve University School of Medicine, Cleveland, 1885; aged 64; died, Dec. 29, 1927, of diabetes mellitus and bronchopneumonia.

Edgar W. Chittenden, Anderson, Ind.; Northwestern University Medical School, Chicago, 1894; aged 63; was found dead in his garage, January 9, of cerebral hemorrhage.

James Allison Leighton, Frederic, Mich.; Hahnemann Medical College and Hospital, Chicago, 1885; formerly a druggist; aged 70; died, Dec. 27, 1927, of bronchopneumonia.

William James Nelson, New Market, N. J.; Medical Department of Columbia College, New York, 1880; aged 74; died, in December, 1927, of angina pectoris.

Luella Zilpha Shaw, West Union, Iowa; State University of Iowa College of Homeopathic Medicine, Iowa City, 1895; aged 59; died, Dec. 3, 1927, of nephritis.

Frank Eugene Stevens, Bridgton, Maine; Medical Department of Columbia College, New York, 1881; aged 70; died suddenly, January 3, of heart disease.

Edwin Sawyer Antisdale, Chicago; University of Michigan Medical School, Ann Arbor, 1890; aged 66; died, January 1, of ulcerative, rheumatic endocarditis.

Adam Leidig Sierer, Harrisburg, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1888; aged 78; died, January 3, of softening of the brain.

Charles M. Rayburn, Paint Rock, Texas; Fort Worth School of Medicine, 1914; aged 40; died, Nov. 21, 1927, at Ballinger of cirrhosis of the liver.

Amelia E. De Mott, Syracuse, N. Y.; Syracuse University College of Medicine, 1878; aged 81; died, Dec. 25, 1927, at Pinehurst, N. C., of heart disease.

Colgan Campbell Carroll, Dudley, Ga.; University of Georgia Medical Department, Augusta, 1878; aged 71; died, Nov. 30, 1927, of arteriosclerosis.

Robert R. Blair, Denver (licensed, Colorado, 1887); aged 73; died, Dec. 19, 1927, at St. Anthony's Hospital, as the result of a cerebral hemorrhage.

John Aldrich ✠ New York; Medical Department of Columbia College, New York, 1889; aged 67; died, Dec. 30, 1927, of chronic interstitial nephritis.

James Gomer Mock, Greenville, S. C.; Medical College of the State of South Carolina, Charleston, 1896; aged 52; died, Dec. 5, 1927, of heart disease.

George E. Reynolds, Columbus, Ind.; Medical Department Butler University, Indianapolis, 1881; aged 70; died suddenly, Dec. 28, 1927, of heart disease.

Harry J. Carrick, Baltimore; University of Maryland School of Medicine, Baltimore, 1889; aged 61; died, January 2, of heart disease.

William I. Fugate, Newcastle, Ind.; Medical College of Indiana, Indianapolis, 1891; aged 60; died, Dec. 28, 1927, of carcinoma of the throat.

John Jackson Foster, Collegepark, Ga.; Southern Medical College, Atlanta, 1889; aged 65; died, January 2, in Cordele, of cerebral hemorrhage.

Addison D. Hobart, Toledo, Ohio; Toledo Medical College, 1892; aged 67; died, Dec. 31, 1927, of arteriosclerosis and cerebral hemorrhage.

Joseph R. Browning, Springhill, La.; Memphis (Tenn.) Hospital Medical College, 1900; aged 60; died, Nov. 21, 1927, of diabetes mellitus.

Michael V. Huffman, Galesburg, Ill.; Eclectic Medical Institute, Cincinnati, 1870; aged 88; died, Dec. 24, 1927, of chronic myocarditis.

Edwin Milton Bingaman, Bernharts, Pa.; Jefferson Medical College of Philadelphia, 1895; aged 56; died, Dec. 14, 1927, of pneumonia.

James Wiley Phipps, Boyce, Texas; University of Nashville Medical Department, 1874; aged 74; died, in December, 1927, of carcinoma.

Benjamin Franklin Smith, Hillsboro, Texas; University of Nashville Medical Department, 1870; aged 78; died, Dec. 22, 1927, of senility.

Francis Bascom Bullard, Mount Pulaski, Ill.; Rush Medical College, Chicago, 1878; aged 77; died, January 2, of heart disease.

Louis A. Seitz, Louisville, Ky.; Louisville Medical College, 1891; aged 67; died, January 1, at the Jewish Hospital, of myocarditis.

Mary Dodds, St. Louis; Homeopathic Medical College of Missouri, St. Louis, 1871; aged 86; died, January 3, of influenza.

Willard Henry Fox ✠ Los Angeles; Albany (N. Y.) Medical College, 1888; aged 66; died, Dec. 7, 1927, of pernicious anemia.

William Webster Neff, Greens Fork, Ind. (licensed, Indiana, 1897); aged 71; died, Dec. 19, 1927.

Bureau of Investigation

CLIFFORD WEINBERG—FAKER

Clifford Weinberg, 37 years old, sometimes known as "Dr. Sterling Clifford Wyman," is again in the toils. At this time, he is charged with having represented himself as a lawyer in New York City and as an employee of a Wall Street investment house, and with stealing a list of stockholders in an insurance company.

Weinberg seems to have first come to the attention of the police when he attached himself to Dr. Lorenz, when the Austrian surgeon visited this country. Calling on Dr. Lorenz, Weinberg represented himself as "Dr. Clifford Wyman," and said that he called as the personal representative of the Health Commissioner of New York City and wanted to cooperate with the clinics. Lorenz, it is said, offered him a salary as a secretary, and Weinberg acted as the "go-between" in the clinic waiting room, where it was an easy matter for him to extract money from parents eager to get place and preferment for their crippled children. Dr. Royal S. Copeland, then Health Commissioner of New York, exposed Weinberg and "Dr. Clifford Wyman" dropped out of sight.

At another time, Weinberg is reported to have gone to New York and presented himself to the Princess Fatima, then visiting this country, as "Lt. Com. Ethan Allen Weinberg." He is said to have told the lady that he could get her an audience with President Harding if her credentials were satisfactory, and it is reported that the Princess not only produced satisfactory credentials, but a more than satisfactory expense account for Weinberg. Weinberg, it seems, actually did present the princess at a private, five-minute audience with the President. As Weinberg was leaving the White House, secret service men nabbed him for impersonating a United States officer, and for this offense, Weinberg got eighteen months in the Atlanta penitentiary, being released in February, 1924.

Another stunt charged to Weinberg was that of posing as "Captain Sterling Wyman," at the time the Harold McCormicks were returning from Europe, a few weeks before they were divorced in Chicago. He is alleged to have told the ship news-men that he could officially deny the rumored McCormick divorce. To McCormick, he posed as a reporter and, apparently, for twenty-four hours, he managed to carry on this imposition, before, as the newspapers put it, "McCormick booted him out."

In 1926, at the time of the death of Rudolph Valentino, the motion picture actor, Weinberg again posed as a physician. This time as "Dr. Sterling C. Wyman," a medical-legal expert and a close friend of Valentino. At the same time, he professed to be on the staff of the Flower Hospital, Manhattan, and to be in constant attendance on Pola Negri.

Weinberg is said to have been born in Brooklyn in 1891, and in 1909, he was appointed as the personal page of a member of the House of Representatives. Upon the expiration of that member's term, Weinberg, it is said, returned to Brooklyn, where he espoused the cause of woman suffrage. A year later, he was appointed Consular Agent to a port in North Africa by the United States Minister to Morocco, who became acquainted with him when he was a page in the House. Weinberg, it is said, however, never got to Morocco, but, at the request of his father, was sent to Bellevue for observation. This, it appeared, followed a larceny from a department store.

From this time on, it seems, Weinberg left the straight and narrow way. In 1915, he is recorded as having been arrested for posing as "Lt. Com. Ethan Allen Weinberg, King's Guard, Consul General for Roumania." In this capacity, he is said to have attended a dinner at the Hotel Astor to Dr. Alfonso Quinorez, Vice-president of San Salvador. The next day Weinberg was arrested for violating his parole from the Elmira Reformatory, to which he had been sent previously at the behest of his parents.

His next offense is said to have been the forging of Senator William M. Calder's name to a bank recommendation, for which offense he was sent to Blackwell's Island.

In 1925, it is reported that, still using the name Wyman, Weinberg, during the Walker-Hylan primary campaign, attempted to become manager of Mayor Hylan's campaign. The police, however, put an end to his ambitions.

In what capacity Clifford Weinberg, *alias* Stephen Weinberg, *alias* Stephen Wyman, *alias* Ethan Allen Wyman, *alias* Clifford G. Wyman, *alias* Sterling Wyman, will turn up, it is hard to say. Should, however, his next pose be a return to the medical field, it is hoped that the history just given may help the medical profession to appraise him correctly.

Correspondence

AN IMMUNIZATION PROGRAM

To the Editor:—The problem offered by the query from Pennsylvania (THE JOURNAL, January 7, p. 51) relative to immunization of nurses is an interesting one in practical immunology, and in part, at least, is not infrequently presented to the physician. Carrying out the same general order as that given in THE JOURNAL, and with the same number of visits to the physician (seventeen), the following scheme would serve to give the most favorable days for observation and for reading the various reactions:

Day zero: Schick test on the right upper arm and control on the left upper arm, using the flexor surface 2 inches above the fold of the elbow.

Day 2: (Two days later): Smallpox vaccination on the left upper arm over the insertion of the deltoid muscle (not on the leg).

Day 3: Dick test on the right forearm, control on the left forearm, using the flexor surfaces at the junctures of the upper and middle thirds.

Day 4: Reading and recording of measurements of the reactions to the Dick and Schick tests and smallpox vaccination. If the Dick test is positive, the first dose for scarlet fever immunization is given in the upper part of the right arm.

Day 11: Reading and recording the reaction to smallpox vaccination; also recording the date of the maximum diameter of redness as observed by the person vaccinated. The second dose for scarlet fever immunization is given in the upper part of the right arm.

Day 18: Third dose for scarlet fever immunization in the upper part of the right arm.

Day 25: Fourth dose for scarlet fever immunization, in the upper part of the right arm. By this time, if the insertion was small and the area kept dry, the smallpox vaccination site should be entirely healed and the crust off, even with primary vaccinia.

Day 28: First dose of typhoid vaccine, in the upper part of the left arm, below the site of the smallpox vaccination.

Day 32: Last scarlet fever dose, in the upper part of the right arm.

Day 35: Second dose, typhoid vaccine, in the upper part of the left arm.

Day 39: First dose of diphtheria immunization (if the Schick test was positive), in the upper part of the right arm.

Day 42: Last dose of typhoid vaccine, in the upper part of the left arm.

Day 46: Second dose of diphtheria immunization, in the upper part of the right arm.

Day 52: Second Dick test and control, in the right and left forearms.

Day 53: Reading and recording of the Dick test. Last dose of diphtheria immunization, in the upper part of the right arm.

Seven months after the first Schick test, the second Schick is given. It is read four days later.

In case this course of treatment is judged to be overstrenuous, and some of the immunizations are accordingly omitted, the succeeding dates would be advanced. Of the

different immunizations, that against smallpox is the most efficacious and should under no circumstances be omitted for nurses entering training. Purpuric variola can easily enter the wards of hospitals undiagnosed, and has given rise to fatalities in the nursing corps more frequently than appears in the literature. By allowing adequate observation of the reactions, opportunity should also be given the vaccinating physician to see that his smallpox vaccine is of full potency; i. e., giving vaccinoid (four to seven day maximum) in at least 50 per cent of those vaccinated over ten years before, and a reaction of immunity (one to three day maximum) or typical vaccinia (eight to fourteen day maximum) in all the remainder. A small series of successful primary vaccinations, though commonly so taken, is not sufficient evidence of full potency of a vaccine if reactions of immunity are to be observed.

J. P. LEAKE, M.D., Washington, D. C.
Surgeon, U. S. Public Health Service.

COMPOSITE NATURE OF VITAMIN B

To the Editor:—In THE JOURNAL, Dec. 31, 1927, p. 2277, you published a letter correcting an erroneous impression conveyed by an editorial in THE JOURNAL, Dec. 10, 1927, p. 2044, as to priority in respect to the composite nature of vitamin B.

Your editorial, as well as the paper of Chick and Roscoe (*Biochem. J.* **21**:698, 1927) on which it was based, overlooked earlier work done at the Hygienic Laboratory by Smith and Hendrick (*Pub. Health Rep.* **41**:201-207 [Feb. 5] 1926), in which it was conclusively shown that dried brewers' yeast contains some growth-promoting factor essential in nutrition other than vitamin B, and that the unknown factor was thermostable.

G. W. McCOY, M.D., Washington, D. C.
Director, Hygienic Laboratory, U. S. P. H. S.

SINGLE DOSE IMMUNIZATION AGAINST SCARLET FEVER

To the Editor:—In THE JOURNAL, Dec. 17, 1927, the question is asked as to the present status of the single dose immunization against scarlet fever with ricinoleated toxin. In the reply the statement is made that "it is hardly to be expected that the addition of a 'detoxifying' agent will increase the immunizing properties of a toxin." This statement, I believe, is misleading.

The purpose of a detoxifying agent is not to step up the immunizing properties of a toxin but rather to make it possible to give toxin in sufficient dosage to stimulate immunization processes. The antitoxin in the toxin-antitoxin mixtures used to immunize against diphtheria is nothing other than a detoxifying agent. Without the use of antitoxin it would be impossible to give diphtheritic toxin in sufficient dosage to stimulate immunity, because of the severe reaction that would result. The anatoxin of Ramon as well as toxoid are diphtheritic toxins treated with detoxifying agents.

In their early work with bacterial toxins, Roux and Yersin found it necessary to use iodine trichloride as a detoxifying agent in efforts to confer a basic immunity against diphtheria in experimental animals. It is doubtful whether any attempt to immunize against a toxin will ever succeed when some detoxifying agent is not employed, because of the severe reaction and the number of doses that would be required.

Gabritschewsky, who first discovered scarlet fever streptococcic toxin, and who recommended its use as an active immunizing agent as early as 1907, found that the toxin caused severe reactions if injected in immunizing doses (*Berl. klin. Wchnschr.* **44**:556, 1907).

Sodium ricinoleate seems to be a suitable agent for detoxifying scarlet fever antigens.

With regard to the one dose method I should like to point out further that there is no reason why repeated doses may not be given if desired. Published reports show that one dose of the ricinoleated culture gives a 10 per cent higher incidence of negative skin tests than the five doses of the naked toxin also recommended. It would therefore seem that ricinoleated antigen has a decided advantage over other types of vaccine.

W. P. LARSON, M.D., Minneapolis.
Professor of Bacteriology and Immunology,
University of Minnesota Medical School.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

DEATH FROM ASPHYXIATION IN AGED PERSONS

To the Editor:—A discussion has arisen or, rather, a difference of opinion, between physicians with regard to the time of death of two persons from asphyxiation by manufactured gas. One person was a woman, aged about 55 years, weighing more than 300 pounds (136 kg.), whose height was about 5 feet 6 inches (167 cm.). The other was her daughter, aged about 20 years, weighing about 125 pounds (56 kg.), whose height was about 5 feet 5 inches (165 cm.). Both were found dead one morning; the daughter was lying on the inner side of the bed and seemed to have died without a struggle. The mother was found lying across the bed and her daughter, in a position that would indicate that she had been awakened by the smell of gas, and had attempted to go to the stove to shut off gas, but had fallen back across the bed and had died in her attempt. The daughter did not seem to have been awakened or disturbed by the falling on her of her mother's body.

The question has now arisen as to which one died first. One physician stated that he thought the mother died first, as she was the victim of high blood pressure and cardiac disease. Another stated that he thought the daughter died first on account of her undisturbed position in bed and also because she probably breathed more deeply than the mother and got a quicker interchange of gases in the blood. The respiration of the mother, who was very fleshy, would be shallower, and her blood would not be contaminated so quickly.

A lawsuit is pending to settle an estate.

I should like your opinion and also some information as to reliable treatises dealing with carbon monoxide poisoning, especially from a medico-legal standpoint. Please omit name.

M.D., Iowa.

ANSWER.—The presumption of survivorship is discussed in an article by James Ewing in Legal Medicine and Toxicology, edited by Frederick Peterson, Walter S. Haines and Ralph W. Webster (ed. 2, Philadelphia, W. B. Saunders Company **1**:228, 1923). The medical testimony in the case cited naturally involves the close consideration of the conditions affecting the tenacity of life of the two persons concerned. Nothing is said by our correspondent of one of the important conditions to be considered in this case; namely, the position of the bodies in relation to the source of the gas, and the probable relative opportunity for inhalation of the gas.

POSITION OF OMENTUM

To the Editor:—Kindly furnish me with information regarding the pathologic physiology concerned in the case of change in the position of the omentum that occurs in acute conditions of the abdomen.

BRUCE F. BRADLEY, M.D., Portsmouth, N. H.

ANSWER.—There are two theories with regard to the change in position of the omentum. The theory of active movement is based on the common finding of the omentum wrapped about an inflamed viscus or foreign body. Some believe that this movement may be due to chemotaxis. The theory of passive movement assumes that any change in position is the result of movements communicated to it.

Florey, Walker and Carleton (*J. Path. & Bact.* **29**:97 [Jan.] 1926) conducted a series of experiments on the movements in animals. They found that the omentum was incapable of any intrinsic movements and that there was no attraction by inflamed areas or foreign bodies, but that it was passively moved about in the abdominal cavity by three factors. In the order of their importance they are: changes in posture, chiefly bending movements; peristalsis of the gastro-intestinal tract, and movements of the diaphragm. The bending movement that most markedly affected the omentum was that of acute flexion, which is the position assumed in many instances

of acute conditions of the abdomen. This position permits the omentum to cover the largest amount of visceral surface.

The reason for the rapid adhesion and engulfing of inflamed areas or of foreign bodies by the omentum is the production of a layer of fibrin at the point of contact. The power of exudation and fibrin production by the omentum is far greater than that of the peritoneum. This applies also to the bactericidal, phagocytic and tryptic activity. Leukocyte emigration is prompt, and there is organization of the fibrin by blood vessels and fibroblasts in a few days.

All movements of the omentum are shown to be entirely passive, while the power of adhesion lies in the exudation, which is greater than that of the peritoneum.

IMMOBILIZATION IN SPINAL ARTHRITIS

To the Editor:—A physician, aged 66, began suffering two years ago with symptoms of sacrolumbar arthritis. The disease has followed an upward course and now involves the upper lumbar region. There is no history and there are no clinical or laboratory signs of syphilis or tuberculosis, and there is no focal infection in the teeth. The patient had gonorrhea forty years ago, but there are no present manifestations. While actual paralysis is absent, walking proves very difficult. Antisyphilitic treatment, iodides, vaccines and diathermy have failed. Would immobilization in plaster be indicated for its possible influence on the diseased vertebra?

A. P. C., M.D., Central America.

ANSWER.—Immobilization in a plaster-of-paris cast would probably be of distinct benefit. If this cannot be done, a Taylor spine brace would undoubtedly be of help. In addition, the daily use of physical therapy, including diathermy, gentle massage and baking, would be of definite value.

The genito-urinary tract should be carefully examined for evidence of residual infection in the prostate and seminal vesicles.

Head traction with the patient recumbent in bed, the application of about 10 pounds traction to the head and from 15 to 30 pounds traction applied to the pelvis by means of a pelvic belt from which two straps proceed to the foot of the bed, and the application of weights, would undoubtedly result in definite improvement.

WARTS IN THE BEARDED AREA

To the Editor:—A patient of mine has several small papillomas or warts on his face, which come and go with each shave. Is there any constitutional treatment for this condition or is it entirely local? What can be done?

A. H. STAPLES, M.D., Oakland, Calif.

ANSWER.—Warts in the bearded area of the face, if few, may be destroyed by fulguration, with the electric cautery, or by curetting and cauterizing with silver nitrate. Acids should not be used. When the lesions are numerous, they will occasionally disappear after repeated local application of castor oil or solution of sulphurated lime. The roentgen ray is also at times efficacious. Internal treatment is not indicated in this type of wart. Recurrences are frequent and unavoidable.

USE OF EPHEDRINE SALTS IN ASTHMA

To the Editor:—My 5 year old grandson is subject to violent paroxysms of asthma. For the past six months the attacks have been controlled by ephedrine sulphate (Lilly) given by mouth, which is always followed by gastric irritability, the vomitus sometimes being streaked with blood. Would the hydrochloride be better?

HOMERS POWERS, M.D., Rankin, Texas.

ANSWER.—The hydrochloride would probably not be superior to the sulphate. Possibly a demulcent vehicle, such as syrup of acacia, might lessen the gastric irritation. The administration of some local anesthetic from fifteen to twenty minutes before taking the dose might lessen the tendency to emesis.

SEDIMENT IN MILK

To the Editor:—What is your opinion regarding sediment in milk? If a milk contains sediment, does it not probably show faulty manipulation during the milking process or the operations that follow? Has it been found that a dirty milk in regard to sediment is unwholesome? What are the present ideas in regard to drives for clean milk? Please use initials only.

M.D., Texas.

ANSWER.—Sediment in milk is an indication of faulty milking methods, such as failure to clean the cows properly, clip long hairs from the udders, tails and flanks, and to wash the udders when necessary. It may also be the result of feeding dry, dusty food just prior to or during milking, and the failure to clean and protect utensils and cans from dust and dirt. Dirty milk is considered unwholesome.

Periodic drives for clean milk are not as effective in maintaining a milk supply at a high standard of purity and cleanliness as are thorough inspection and sampling under the authority of a good milk ordinance. Routine inspections at frequent intervals are necessary and should include the making of a physical examination of the milk, as delivered from the farms to the plant or to the consumer, and the making of temperature, sediment and reductase or bacterial tests on samples collected.

Milk plants should be requested to run these tests also at intervals frequent enough to maintain the supply in a satisfactory condition.

Thorough, constructive inspection and sampling build confidence in the milk supply and increase milk consumption.

FAVORITE CESAREAN SECTION IN THE UNITED STATES

To the Editor:—Do American obstetricians use extensively Portes' cesarean method? What section do they prefer for use in infected cases?

ALFREDO MONTAÑO, M.D., Mexico, D. F., Mexico.

ANSWER.—The only published cases of Portes' operation thus far performed in the United States are those of Phaneuf of Boston, which appeared this year in *Surgery, Gynecology and Obstetrics.*

It is not as yet an established operation for infected patients, and the mortality in fifty cases reported in France was 10 per cent. This is not bad when one remembers that all the patients were presumably infected.

In a frankly infected case of neglected labor, when it is absolutely necessary to save the uterus, the Portes operation may help out a bad situation.

NEOARSPHENAMINE AND PSORIASIS

To the Editor:—Is the use of neoarsphenamine intravenously contraindicated in the treatment of a four plus Wassermann reaction in the presence of a psoriasis skin lesion of six months' duration? If so, how would you treat such a case? Please omit name.

M.D., New York.

ANSWER.—Neoarsphenamine is not contraindicated in the presence of psoriasis. It is not advisable to use irritating ointments during the course of treatment, and the skin should be watched carefully for signs of an arsenical dermatitis. In all probability the psoriasis will improve.

PRIAPISM IN INFANCY

To the Editor:—A baby, 3 months old, healthy, active and of normal delivery, has had an erection of the penis on the slightest touch since birth. The penis is larger than normal; the foreskin retracts easily and does not show any sign of irritation. The parents are healthy. Have you any suggestion as to the cause or correction of this condition? Please omit name and address.

M.D., South Dakota.

ANSWER.—The erections referred to are probably excited by an excessive sensitiveness of the glans penis. Circumcision should be employed. The hypersensitiveness of the glans will be reduced to the norm, once the surface is toughened by the permanent exposure following circumcision.

VACCINATION OF DOGS AGAINST RABIES

To the Editor:—In THE JOURNAL, Dec. 17, 1927, p. 2136, in answer to the query of Dr. T. W. Rhoads of Quincy, Ill., you say that the injection of vaccine to prevent rabies in dogs is regarded universally as efficient. If you refer to the Pasteur, or its modification, "the Semple treatment," you are correct in saying it is universally regarded as efficient in preventing the development of rabies in a person bitten by a rabid animal; but you will find that reports from both the United States Public Health Service and the Bureau of Animal Industry discredit the use of "Canine Vaccine" as a preventive of rabies among dogs. See the Report of the last Conference of State Health Officers with the Surgeon General of the U. S. Public Health Service, May, 1927.

ENNION G. WILLIAMS, M.D., Richmond, Va.
State Health Commissioner.

X-RAY AND EPILATION

To the Editor:—With reference to your reply to a query, January 14, I fear that your information may be incorrect.

Repeated small doses of roentgen rays sometimes cause loss of hair, either sudden or gradual, without producing a visible erythema or first degree reaction.

FRED WISE, M.D., New York.

POSITIVE GOLD CURVE WITH NEGATIVE WASSERMANN REACTION

To the Editor:—I have a patient, aged 43, who was committed to a state hospital for the insane six years ago. He received intensive treatment at that time and was paroled improved. Two years ago he had pneumonia, during which time a blood and spinal fluid examination was made by a reputable physician. The blood was reported one plus and the spinal fluid negative. He, however, continued to take treatment at two of the best clinics in southern California. Two months ago a spinal fluid test was made by one of these clinics and was reported negative. He, however, found that his memory was failing him, so he continued the treatment. I made a test of the spinal fluid and found it negative, but the colloidal gold curve was 0135554320. It is too recent to repeat a spinal Wassermann test on him and I am desirous of knowing whether it is possible to get a positive colloidal gold curve in face of a negative Wassermann reaction. Will you kindly give me a report on this at your earliest convenience?

RUSSELL M. GRAY, M.D., Norwalk, Calif.

ANSWER.—A positive colloidal gold test is sometimes found in the absence of a positive Wassermann reaction, though rarely if the latter reaction is performed with as much as from 0.5 to 1.0 cc. of spinal fluid. It is well to remember, however, that the colloidal gold test is subject to great variations with differences in technic, though the regularity of the curve reported would tend to negative technical error. It may be pointed out also that the curve reported is not that usually observed in general paralysis (parenchymatous syphilis of the brain) but corresponds more with that observed with meningovascular syphilis. In such conditions the Wassermann reaction with smaller doses of spinal fluid (from 0.2 to 0.5 cc.) is not infrequently negative. If the treatment administered in the state hospital was of the ordinary antisyphilitic character, and not tryparsamide or infection with malaria or other fever-producing agent, the marked improvement and prolonged remission would speak against, though not entirely negative, a diagnosis of general paralysis. The facts stated suggest the wisdom of careful examination into the statement of a failing memory, as the repeatedly negative serologic studies and the clinical course would make one think that the patient is possibly suffering more from a phobia than from active syphilis.

EPIDERMOLYSIS BULLOSA

To the Editor:—Could you give any suggestions as to treatment of the following case: A boy, aged 2 years, whose general condition is fair, who never is sick much but who at the same time is small for his age and not as robust as other children in the family, all his life has had "sores" on the hands and feet and other parts of the body. Following every minor bruise, as of the palm of the hand from catching himself as he falls to the floor, or of the ankle as he accidentally strikes it with the other foot in walking, almost immediately a bleb appears, a collection of serous or serosanguineous fluid, between the superficial and deep layers of the skin; these soon become infected, so that the condition somewhat resembles impetigo. However, the lesions heal readily with any simple ointment application, only to recur again following any slight bruise. Local applications of many sorts, general tonic treatment and use of vaccines have all availed nothing. Any assistance you can give will be greatly appreciated.

J. L. WEBB, M.D., Carbon Hill, Ohio.

ANSWER.—The condition is probably epidermolysis bullosa. The treatment of this disorder is unsatisfactory. There is a hypersensitiveness to slight injury that resists all known methods of management. The areas should be protected as much as possible from injury. When lesions occur they may be treated with a simple antiseptic ointment, such as 3 per cent ointment of ammoniated mercury. A certain amount of natural resistance will occur as time passes or as the child grows older.

ANESTHETICS AND STATUS LYMPHATICUS

To the Editor:—In reference to persistent thymus, enlarged thymus, status lymphaticus, and thymolymphaticus, with sudden death, all I have read so far indicates that death comes suddenly in primary anesthesia, but the authors fail to mention what the anesthetic agent was. Is there any difference? Somehow, I have been accustomed to thinking of these deaths as occurring when chloroform was used.

S. G. LOGAN, M.D., Ridgway, Pa.

ANSWER.—It is held that death may be induced in persons with an enlarged thymus by "slight injury, infection or anesthesia." Deaths with ether and even with local anesthesias are reported but are rare in comparison with those occurring with chloroform. One clinic found lymphatic hyperplasia in every death from chloroform anesthesia during a period of twenty years. For persons with an enlarged thymus, chloroform is regarded as definitely contraindicated, as well as all closed methods, and the ether drop or vapor method as safest for general anesthesia in such cases.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALASKA: Juneau, March 6. Sec., Dr. Harry C. De Vighne, Juneau.

CALIFORNIA: Los Angeles, Feb. 27. Sec., Dr. Charles B. Pinkham, 623 State Bldg., San Francisco.

CONNECTICUT: Hartford, March 13-14. Sec., Reg. Bd., Dr. Robert L. Rowley, 79 Elm St., Hartford. Homeo. Bd., New Haven, March 13. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven. Board of Healing Arts, New Haven, Feb. 11. Connecticut Bd. of Healing Arts, Box 1895, Yale Station, New Haven.

KANSAS: Topeka, Feb. 14. Sec., Dr. Albert S. Ross, Sabetha.

MAINE: Portland, March 13-14. Sec., Dr. Adam P. Leighton, Jr., 192 State St., Portland.

MASSACHUSETTS: Boston, March 13-15. Sec., Dr. Frank M. Vaughan, 144 State House, Boston.

NATIONAL BOARD OF MEDICAL EXAMINERS: Class A Medical Schools, Feb. 15-17. Dir., Dr. Everett S. Elwood, 1600 Walnut St., Philadelphia.

NEBRASKA: Omaha, Feb. 1-3. Sec., Mr. Lincoln Frost, Dept. of Public Welfare, Lincoln.

NEW HAMPSHIRE: Concord, March 8. Sec., Dr. Charles Duncan, Concord.

OKLAHOMA: Oklahoma City, March 13-14. Sec. Dr. J. M. Byrum, Shawnee.

PENNSYLVANIA: Philadelphia, Jan. 31-Feb. 4. Dir., Mr. C. D. Koch, Harrisburg.

PHILIPPINE ISLANDS: Manila, Feb. 14. Sec., Dr. José V. Gloria, 686 Ave. Rizel, Manila.

PORTO RICO: San Juan, March 6. Sec., Dr. Diego A. Biascoechea, 3 Allen St., San Juan.

VERMONT: Burlington, Feb. 14. Sec., Dr. W. Scott Nay, Underhill.

WEST VIRGINIA: Charleston, Feb. 8. State Health Commissioner, Dr. W. T. Henshaw, Charleston.

WISCONSIN: Madison, March 17. Sec., Basic Science Bd., Prof. M. F. Guyer, U. of Wisconsin.

WYOMING: Cheyenne, Feb. 1-3. Sec., Dr. G. M. Anderson, Citizens Bank Bldg., Cheyenne.

New Jersey June Examination

Dr. Charles B. Kelley, secretary of the State Board of Medical Examiners of New Jersey, reports the written examination held at Trenton, June 21-22, 1927. The examination covered 9 subjects and included 90 questions. An average of 75 per cent was required to pass. Of the 70 candidates examined, 65, including 19 osteopaths, passed, and 5, including an osteopath, failed. One hundred and twenty candidates, including 9 osteopaths and an undergraduate, were licensed by endorsement of their credentials. The following colleges were represented:

PASSED		
College	Year Grad.	Per Cent
University of Arkansas School of Medicine	(1926)	77.5
Georgetown University School of Med	(1926) 79.5, 83.3,	83.5, 84
University of Louisville School of Medicine	(1925)	80.5
University of Maryland School of Medicine and the College of Physicians and Surgeons	(1926)	80.1
Harvard University Medical School	(1926)	85
University of Minnesota Medical School	(1927)	86.4
Columbia University College of Physicians and Surgeons	(1925) 83.5; (1926)	85.6
Cornell University Medical College	(1926)	85
New York Homeopathic Med. College and Flower Hosp.	(1910)	75
Hahnemann Medical College and Hospital of Philadelphia,, Homeopathic	(1926) 84.6, 85, 86.6,	89, 89.1
Jefferson Medical College of Philadelphia	(1925) 78.4,	83, 87.1, (1926) 78.7, 83.1, 85.4, 85.6, 86.6, 89.2, 89.2, 91, 92.3
Temple University School of Medicine	(1926) 86.3; (1927)	88.8
University of Pennsylvania School of Medicine	(1925)	88.4, (1926) 83.3, 87
University of Pittsburgh School of Medicine	(1926)	84.5
Woman's Medical College of Pennsylvania	(1925) 86.6; (1926)	84
Medical College of the State of South Carolina	(1926)	86.6
Baylor University College of Medicine	(1926)	79.4
McGill University Faculty of Medicine	(1926) 81.8,	84.4, 86.4
Queen's University Faculty of Medicine	(1926)	85.6
University of Toronto Faculty of Medicine	(1926)	85.3
University of Naples, Italy	(1902)	76.5
Osteopaths	75.1, 75.1, 78, 78.4, 80, 80.7, 81.8,	82, 82, 82.5, 83.3, 83.8, 84.8, 85.2, 85.8, 86, 86.1, 86.7, 87.5,

FAILED		
College	Year Grad.	Per Cent
Meharry Medical College	(1925)	69.6
University of Naples, Italy	(1919) 65.7; (1926)	57.3
University of Rome, Italy	(1898)*	64.6
Osteopath		72.5

ENDORSEMENT OF CREDENTIALS		
College	Year Grad.	Endorsement with
Yale University School of Medicine	(1924)	Connecticut
George Washington University Medical School	(1925)	New York
Georgetown University School of Medicine	(1926)	New York
Howard University School of Medicine	(1925, 3)	Dist. Colum.
Emory University School of Medicine	(1924)	Georgia
University of Illinois College of Medicine	(1905), (1926)	Illinois
Tulane University of Louisiana School of Medicine	(1923)	Penna.
Johns Hopkins University School of Medicine	(1922)	Maryland
Maryland Medical College, Baltimore	(1911)	Penna.

University of Maryland School of Medicine and the College of Physicians and Surgeons.....(1925, 2) (1925, 2), (1926) New York — Maryland
Boston University School of Medicine.....(1914) — Mass.
Harvard University Medical School.....(1911) — R. Island
Tufts College Medical School.....(1924) — Maine
University of Michigan Medical School.....(1924), (1925) (1923), (1926) New York — Michigan
Albany Medical College.....(1899), (1900), (1917) — New York
Bellevue Hospital Medical College.....(1894) — New York
Columbia University College of Physicians and Surgeons ....(1893), (1896), (1918, 2), (1921), (1924, 2), (1925, 3) — New York
Cornell University Medical College..(1903), (1922), (1925, 3) (1925, 3) N. B. M. Ex. — New York
Fordham Univ. School of Med., N. Y. City...(1909), (1920) — New York
Long Island College Hospital..(1903) Illinois; (1901), (1926) — New York
New York Homeopathic Medical College and Flower Hospital .....(1908), (1926) — New York
Syracuse University College of Medicine.....(1907) — New York
University and Bellevue Hospital Medical College.... .....(1907), (1924), (1925, 6) — New York
Eclectic Medical College, Cincinnati.....(1899) (1926) New York — W. Virginia
Hahnemann Medical College and Hospital of Philadelphia, Homeopathic .....(1925) — Delaware
Jefferson Medical College of Philadelphia.....(1925) (1921) New York; (1925) North Carolina; (1895), (1907), (1920), (1923) Pennsylvania — California
Medico-Chirurgical College of Philadelphia.....(1898), (1901) — Penna.
Temple University School of Medicine.....(1918) — Penna.
University of Pennsylvania School of Medicine.....(1922) (1917), (1921), (1922), (1923), (1925) Penna.; (1918) N. B. M. Ex. — N. Carolina
University of Pittsburgh School of Medicine.....(1914) — Penna.
University of Tennessee College of Medicine.....(1925) — Louisiana
Baylor University College of Medicine.....(1925, 2) — Texas
University of Vermont Coll. of Med..(1914), (1924), (1925) — Vermont
Medical College of Virginia.....(1920), (1925) — Virginia
University of Virginia Department of Medicine.....(1919) (1925) Virginia — New York
McGill University Faculty of Medicine.....(1917) — New York
Queen's University Faculty of Medicine.....(1924) — Penna.
University of Toronto Faculty of Medicine...(1908), (1925) (1924) Pennsylvania — New York
University of Western Ontario Medical School.....(1920) — New York
University of Vienna, Austria.....(1916),* (1921) — New York
University of Paris, France .....(1914)* — Ohio
University of Berlin, Germany .....(1914) — Minnesota
University of Budapest, Hungary..(1918) Mississippi; (1923) — New York
University of Naples, Italy .....(1921)* — Iowa
University of Oslo, Norway .....(1912)* — Minnesota
School of Medicine and Surgery, Lisbon, Portugal....(1917)* — R. Island
University of Zurich, Switzerland.....(1919),* (1920) — New York
Undergraduate ..... — Colorado
Osteopaths.....(1923) Pennsylvania; (1925) Michigan, Missouri, 2, New York; (1926) Kansas, Missouri, 2, Mississippi

* Verification of graduation in process.

New York May Report

Mr. Herbert J. Hamilton, chief of the Education Department of the New York State Board of Medical Examiners, reports that 101 candidates were licensed by endorsement of their credentials from May 1 to Dec. 1, 1927. The following colleges were represented:

College	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement with
Stanford University School of Medicine		(1923)	California
University of California Medical School		(1922)	California
George Washington University Medical School (1916) Porto Rico		(1916)	Dist. Colum.
Georgetown University School of Medicine		(1913)	Ohio
Emory University School of Medicine (1914) Georgia		(1897)	S. Carolina
Illinois Medical College, Chicago		(1899)	Illinois
Northwestern University Medical School		(1907)	Illinois
Rush Medical College		(1911)	Diploma
University of Illinois College of Medicine		(1906)	Illinois
Indiana University School of Medicine		(1925)	Indiana
State University of Iowa College of Medicine		(1921)	Iowa
Tulane University of Louisiana School of Medicine		(1920)	Louisiana
Baltimore Medical College..(1908), (1911) Porto Rico; (1908)			Connecticut
College of Physicians and Surgeons, Baltimore		(1908)	Penna.
Johns Hopkins University School of Medicine (1913), (1918), (1921) Maryland; (1922), (1924)		(1906)	New Jersey N. B. M. Ex.
Boston University School of Medicine		(1914)	Virginia
Harvard University Medical School (1915), (1918) Massachusetts; (1924, 5), (1925, 2)		(1916)	Iowa N. B. M. Ex.
Detroit College of Medicine and Surgery		(1915)	Michigan
Univ. of Michigan Med. School....(1920) Michigan; (1925)			Wisconsin
Minneapolis College of Physicians and Surgeons		(1906)	California
University of Minnesota Medical School		(1922)	Minnesota
Washington University School of Medicine		(1922)	Missouri
Creighton University School of Medicine		(1921)	Nebraska
Columbia University College of Phys. and Surgs. (1913) Massachusetts; (1926, 2) N. B. M. Ex.		(1885)	Diploma
Cornell University Medical College		(1925, 5), (1926, 3)	N. B. M. Ex.
New York University Medical College		(1897)	Mass.
University and Bellevue Hospital Medical College (1925) N. B. M. Ex.		(1905)	Vermont
Eclectic Medical College, Cincinnati		(1919)	Ohio
Ohio State University College of Medicine		(1922), (1925)	Ohio
University of Cincinnati College of Medicine		(1919)	Ohio
Western Reserve University School of Medicine		(1909)	Ohio
University of Oregon Medical School		(1922)	N. B. M. Ex.
Jefferson Medical College of Philadelphia		(1920)	Penna.
Medico-Chirurgical College of Philadelphia		(1915)	Penna.
University of Pennsylvania School of Med. (1925) N. B. M. Ex.		(1921), (1924)	Ohio
University of Pittsburgh School of Medicine (1922) Ohio		(1899), (1918)	Penna.
Woman's Medical College of Pennsylvania (1907) New Jersey; (1924) N. B. M. Ex.		(1892)	Diploma;
University of Tennessee College of Medicine		(1917)	Tennessee
Vanderbilt University School of Medicine		(1925)	N. B. M. Ex
Baylor University College of Med.		(1921) Texas; (1926)	N. B. M. Ex.
University of Texas School of Medicine		(1920)	Texas
University of Vermont College of Medicine		(1912), (1918)	Vermont
Medical College of Virginia		(1904)	Virginia
University of Virginia Department of Med.		(1921), (1924)	Virginia
Marquette University School of Medicine		(1913)	Wisconsin
University of Toronto Faculty of Medicine (1925) N. B. M. Ex.		(1924)	New Jersey
University of London, England		(1917)*	New Jersey
University of Paris, France		(1908)	Mass.
University of Heidelberg, Germany		(1911)	Ohio
University of Leipzig, Germany		(1905)	Diploma
University of Munich, Germany		(1916)	Diploma
National University of Athens, Greece		(1906)*	New Jersey
Dragomanov Institute, Russia...(1915)* New Jersey; (1915)			California
University of Kazan, Russia		(1915)*	Diploma
Univ. of Odessa, Russia..(1914)* Diploma; (1917),* (1922)			*New Jersey
University of Voronezh, Russia		(1916)*	Delaware
University of Constantinople, Turkey		(1914)*	Diploma

* Verification of graduation in process.

Book Notices

RADIUM IN GYNECOLOGY. By John G. Clark, M.D., and Charles C. Norris, M.D., Professor of Obstetrics and Gynecology, University of Pennsylvania. With a chapter on Physics by Gioacchino Failla, E.E., M.A., D.Sc., Physicist, Memorial Hospital, New York. Cloth. Price, $8. Pp. 315, with 49 illustrations. Philadelphia: J. B. Lippincott Company, 1927.

A suitable climax to a life of industry and production of the late John G. Clark, and with no less credit to the co-author, C. C. Norris, is their splendid contribution to gynecology and radiology. The book covers the field more or less completely and is based chiefly on the large personal experience of the authors. The subject matter is prefaced by an historical sketch on radium, which is followed by a longer chapter on the physics of radium, the latter contributed by Gioacchino Failla. A general consideration of the pathology and action of radium on tissues precedes the description of tumors of the genital tract, and the place of radiation therapy in each is described, beginning with the vulva. The illustrations add considerably to the text, showing the methods of application of radium as well as effects of radium on the tissues. The chapters on carcinoma of the uterus are especially thorough. The book is well put up with good paper and large print. It represents one of the most valued contributions to modern gynecologic therapy.

THE BLOOD VESSELS OF THE HUMAN SKIN AND THEIR RESPONSES. By Thomas Lewis, M.D., F.R.S., Physician of the Staff of the Medical Research Council. Cloth. Pp. 322, with 76 illustrations. London: Shaw & Sons, Ltd., 1927.

In this volume Lewis not only presents the results of his investigation into the responses of the vessels of the skin to various stimuli, and the mechanism of the response, but provides a reference work which should stimulate research and afford a firm foundation for further investigation. A proper clinical interpretation of the phenomenon observed in the vascular responses of the vessels of the skin cannot be had without an accurate knowledge of the underlying mechanism, and such a basis the author has afforded to the clinician. The opening chapters are concerned with the anatomic background and the methods of study. The reactions to various stimuli are then considered. The white reaction, following a light stroke on the skin, is shown to result from contraction of the minute vessels. When the skin is stroked more firmly with a blunt instrument, a red reaction follows along the line of pressure. When the skin is susceptible or the stroke stimulus more strong or repeated, the visible reaction extends beyond the line of pressure and there is a flush of the adjacent skin, which is referred to as the flare. On sensitive skin, this is followed by a wheal formation, reaching its height in three and a half minutes. This full reaction, consisting of a local vasodilatation, the flare and the local edema, constitute what is called the triple response. This is elicited by other stimuli, as a scratch, a prick, or freezing or burning a minutely limited area. Histamine pricked into the skin produces an identical reaction. Three events follow the various stimuli: (*a*) a primary and local dilatation of the minute vessels of the skin; (*b*) a more widespread dila-

tation of the neighboring arterioles, brought about through a local nervous reflex; (*c*) locally increased permeability of the vessel walls. This triple response is shown to be due to the liberation from the skin of a diffusible substance, dilating and increasing the permeability of the vessels with which it is in contact, and producing the flare by a reflex arteriolar dilatation from the same clinical stimulus. It is postulated that this is a substance liberated from the injured cells and resembling histamine. This is supported by further considerations, and the conclusion is finally stated that the H substance and histamine are one and the same. The relation of this substance to inflammation, to traumatic shock and to anaphylaxis is described, as are the slower reactions to other stimuli, as ultraviolet radiation, the roentgen ray, bacterial poisons and chemical poisons. The correlation of this locally released substance with other skin phenomena is discussed, as the reddening of the skin with heat or cold, herpes zoster, and cutaneous eruptions. A balancing mechanism is shown, relaxing the minute vessels in response to the metabolic needs of the adjacent tissues, and closing them when these needs are satisfied. The mechanism of these phenomena and the supporting evidence are given in detail. The volume is not only of great interest but also of practical value to the student and to the physician. Observed phenomena are of little value without their physiologic interpretation, and here a basis is afforded for such deduction.

LEHRBUCH DER PHYSIOLOGISCHEN UND PATHOLOGISCHEN CHEMIE IN 75 VORLESUNGEN FÜR STUDIERENDE, ÄRZTE, BIOLOGEN UND CHEMIKER. Zugleich II. völlig neubearbeitete und erweiterte Auflage der Probleme der physiologischen und pathologischen Chemie. II Band: Stoffwechsellehre. 4 Lieferung: Eiweissstoffwechsel. Von Prof. Dr. Otto Fürth, Vorstand der Abteilung für physiologische Chemie im physiologischen Institute der Wiener Universität. Paper. Price, 15 marks. Pp. 148. Leipsic: F. C. W. Vogel, 1927.

This volume contains twelve lectures covering the history of protein food from the time it enters the stomach to its resynthesis and catabolism, with especial emphasis on (*a*) the proteolytic and peptolytic enzymes found in organs, (*b*) urea, (*c*) hippuric acid, (*d*) creatine and creatinine, (*e*) oxyproteic acids and (*f*) the final fate of hemoglobin. In general, the subject matter is presented in an interesting style and in many cases the discussion is critical. The discussion on intestinal digestion is good, although the author still tends to adhere to the choline theory of vasodilatin action. The recent work of the Willstätter laboratory on trypsin activation appears to be accepted without qualification. The Abderhalden reaction is again upheld and discussed in some detail in the lecture on organ ferments. A brief treatment on nitrogen distribution in the urine is given, but the values are expressed in the main as percentages of the various forms of nitrogen in terms of the urinary nitrogen and not as absolute weights. Analytic methods are discussed in certain cases, although no serious attempt has been made in general to make these discussions truly complete and critical.

THE METHODS OF CLINICAL DIAGNOSIS. By Alexander George Gibson, M.D., F.R.C.P., Honorary Physician to the Radcliffe Infirmary, and William Tregonwell Collier, M.D., M.R.C.P., Honorary Assistant Physician to the Radcliffe Infirmary. Cloth. Price, $5. Pp. 398, with 140 illustrations. New York: Longmans, Green & Company, 1927.

"The object of this book is to supply the student unqualified and qualified with a short practical guide to the fundamentals of diagnosis." It accomplishes this purpose so far as it gives an adequate description of the methods of examination both clinical and laboratory; but not nearly enough emphasis is laid on the importance of the history taking, only three and a half pages being devoted to this topic. A proper emphasis is put on the fact that a physician should depend largely on his ability to inspect, palpate, percuss and auscultate accurately in the making of diagnoses and relegate the laboratory and mechanical aids to a place of secondary importance. This is an excellent feature in a modern textbook, as the recent graduate of this day is all too prone to think that he must have a complete roentgen-ray and clinical laboratory and other technical assistance before he may even attempt a complete and accurate diagnosis. The general features are first taken up, then regional examination and lastly examination by systems, the examination of children and clinical pathology. In the appendix there is a table of infectious diseases, with incubation periods, average quarantine periods and periods of infectivity. While little is said regarding history taking, the symptoms associated with pathologic changes in various organ systems are discussed in connection with the chapters on that system. The information given is never sufficient to make it possible for a student even to approach an accurate diagnosis as a result of the symptoms alone or in conjunction with the physical and laboratory observations as given. This is a book in which are given the methods of examination, their application and importance in connection with the various systems and with the body as a whole, and, in addition, the simpler and more commonly used clinical laboratory methods. The need of a complete physical examination in all cases is stressed. An unqualified student, using this as a textbook, could hardly avoid overestimating the importance of physical examination and underestimate that of history taking, so often of greater value, though he would receive a proper estimation of the importance of the mechanical aids, such as the roentgen ray and the electrocardiogram.

HOW TO LIVE LONGER. By John Clarence Funk, M.A., LL.B., Sc.D., Director, Bureau of Public Health Education, Pennsylvania State Department of Health. Cloth. Price, $1.50 net. Pp. 146, with illustrations. Philadelphia: David McKay Company, 1927.

The author, who is director of the bureau of public health education in the Pennsylvania state department of health, has caught the proper point of view for presenting health education to the public. He is at the same time not unaware of what physicians feel in relation to these matters, and avoids trespassing on the ground which properly belongs to the medical man. His humor lightens what is ordinarily a somewhat dry subject. The illustrations, in the form of cartoons by Huber, are remarkably appropriate to the text.

LEHRBUCH DER OPERATIVEN GEBURTSHILFE FÜR AERZTE UND STUDIERENDE. Von Professor Dr. Georg Winter. Paper. Price, 28 marks. Pp. 475, with 239 illustrations. Berlin: Urban & Schwarzenberg, 1927.

This is essentially an elaboration of the monograph on the same subject which Winter wrote with the assistance of W. Benthin for Halban and Seitz's monumental work, "Biologie und Pathologie des Weibes." The forty-six pages of bibliography which appear in the original monograph are omitted from the present book, but a few new subjects have been added and H. Naujoks assisted in the work. This book is based on Winter's extensive personal experience. The indications and technic of every obstetric operation are given in great detail. Likewise every kind of injury to both mother and child which may result from these operations is discussed thoroughly. In many sections of the book, Winter gives an analysis of his own statistics. In his hands, spontaneous deliveries had one-third the mortality of forceps deliveries, one-fourth that of breech extractions and one-fifth that of internal version. The section on forceps operations is thoroughly worked out. Various types of forceps are described, including the Kielland forceps. Winter believes that the Kielland forceps should be used only by persons who have had considerable experience in obstetrics. In the author's clinic, among 587 cases in which extraction immediately followed internal version the fetal mortality was 4.5 per cent, whereas among 174 cases in which extraction was delayed, 49.4 per cent of the babies died. Hence the author warns that internal version should not be performed until the cervix is completely effaced and dilated so that immediate extraction may be performed. Even in cases of transverse presentation, one may safely wait for complete dilatation before interfering. Forty-four pages and twenty-five illustrations are devoted to the section concerning destructive operations on the child. Such a large section is a reflection on the character of the obstetric work done by German physicians, for destructive operations should rarely be necessary. For the performance of cesarean section, the author's preference is the intraperitoneal or transperitoneal cervical type. This book, which is intended for the general practitioner, is written in a clear, simple style. The illustrations are unexcelled for their clearness and instructiveness. A number of illustrations are colored, and others are arranged in series on plates in such a way that each plate depicts all the steps of an operation. The book is of the greatest value

not only to the general practitioner but also to the obstetric specialist. Even for those who cannot read German it will be useful, because the beautiful illustrations give almost as much information as the text.

FOOD AND THE PRINCIPLES OF DIETETICS. By Robert Hutchison, M.D., F.R.C.P., Physician to the London Hospital. Sixth edition. Cloth. Price, $5. Pp. 610, with 33 illustrations. New York: William Wood & Company, 1927.

In this edition there have been few alterations. It seems essentially to be a reprint of the former edition. There is little regarding vitamins, the probable importance of iodine in the diet, and no mention of the importance of the fatty acid: dextrose ratio in the management of diabetes mellitus, in the discussion of which the starvation management of Allen is advocated. Insulin is not even mentioned. In discussing normal diets a rather high protein content is recommended. This edition contains almost no references to recent work in dietetics.

CARL FLÜGGES GRUNDRISS DER HYGIENE. Für Studierende und praktische Ärzte, Medizinal- und Verwaltungsbeamte. Von Dr. Bruno Heymann, a. o. Professor an der Universität Berlin. Tenth edition. Cloth. Price, 39 marks. Pp. 714, with 213 illustrations. Berlin: Julius Springer, 1927.

The first edition of this work, which is perhaps the best known book on hygiene, was published in 1889. Its contents and general character are too well known to need description. While in some fields the book has been brought down to date, in others it is not in accord with American ideas. An immunologist might regret the space spent on Ehrlich's theories almost to the exclusion of more recent conceptions of infection and immunity. It is often a pleasure to see old book friends revive, and this edition is no exception.

CONDITIONED REFLEXES. An Investigation of the Physiological Activity of the Cerebral Cortex. By I. P. Pavlov, Director of Physiological Laboratories in the Russian Academy of Sciences and the Institute of Experimental Medicine. Translated and edited by G. V. Anrep, M.D., D.Sc., Lecturer in Physiology in the University of Cambridge. Cloth. Price, 89. Pp. 430, with 18 illustrations. New York: Oxford University Press, 1927.

This monumental work is an almost stenographic report of a series of lectures delivered at the military medical academy in Petrograd, in which the author attempted to give a full and systematic exposition of the researches on the activity of the cerebral hemispheres in the dog that were made in the laboratory in the course of twenty-five years. After describing the methods of establishing conditioned reflexes of various degrees of complexity, the author exposes, by numerous examples, the irradiation and concentration of excitatory and inhibitory processes that make the activity of the cerebrum so complex. Sleep, according to Pavlov, is nothing but an irradiation of inhibition from a certain point to the entire cortex. The varied and sometimes unusual behavior of some of the dogs is ascribed to pathologic disturbances of the cortex, developed through functional interference, intentional on the part of the experimenter or accidental as a result of occurrences in the dog's environment. Veritable neuroses and psychoses are described, as well as therapeutic measures that were employed (successfully) to combat them. The author shows how the observations in dogs apply to pathologic states of the nervous system in man, although he does so with extreme caution. He realizes the complexity of the subject and the lability of the nervous states he and his assistants are studying. In one of the last chapters of the book (written in 1926) he is obliged to revise some of the interpretations given to the phenomena described in the lectures, because of new data obtained since the time the lectures were delivered. This makes the reader wonder about the other interpretations advanced by the author, and produces a general feeling of bewilderment, which is increased by the enormous mass of details found in the book. One admires the imagination and ingenuity of the experimenters, and feels compelled to admit that the experiments described constitute an epoch making contribution to our knowledge of the function of the cerebral cortex. But at the same time one is impressed by the condition of flux that characterizes the whole subject matter of the book, which makes it more like a long journal article than like an orderly exposition of firmly established facts.

Books Received

Books received are acknowledged in this column, and such acknowledgment must be regarded as a sufficient return for the courtesy of the sender. Selections will be made for more extensive review in the interests of our readers and as space permits. Books listed in this department are not available for lending. Any information concerning them will be supplied on request.

THE ELEMENTS OF CRIME (PSYCHO-SOCIAL INTERPRETATION). By Boris Brasol, M.A. With introductions by John H. Wigmore, Professor of Law in Northwestern University, and William A. White, M.D., Superintendent of Saint Elizabeth's Hospital, Washington, D. C. Cloth. Price, $5. Pp. 433, with illustrations. New York: Oxford University Press, 1927.

Legal and psychologic elucidations of the criminalistic impulse.

THE PREVENTION OF PREVENTABLE ORTHOPEDIC DEFECTS, WITH SPECIAL REFERENCE TO THE SPINE AND THE FEET. By S. C. Woldenberg, B.Sc., M.D., M.Sc., Attending Orthopedist Post Graduate Hospital and Michael Reese Dispensary, Chicago. Cloth. Price, $2. Pp. 120, with 29 illustrations. Saint Paul: Bruce Publishing Company, 1927.

Well printed discussion of common disturbances of the bones and joints.

LE TRAITEMENT DES FRACTURES DU COL DU FÉMUR PAR LA MÉTHODE DU PROFESSEUR PIERRE DELBET. (Indications opératoires et technique basées sur l'étude des résultats éloignés de cent treize interventions). Par Jacques Leveuf, et Ch. Girode, chirurgiens des hôpitaux. Paper. Price, 30 francs. Pp. 148, with 164 illustrations. Paris: Masson & Cie, 1927.

Treatment of fractures of the femur expounded with many diagrams.

FINANCIAL ADVICE TO A YOUNG MAN. A Program for Getting Along in the World. By Merryle Stanley Rukeyser, Associate in Journalism, Columbia University. Cloth. Price, $3. Pp. 410. New York: Simon & Schuster, 1927.

Significant advice presented in readable form by one of the leading writers on financial subjects.

DER TONUS DER SKELETTMUSKULATUR. Von Dr. E. A. Spiegel, Privatdozent, Assistent am neurologischen Institut der Universität Wien. Second edition. Paper. Price, 18 marks. Pp. 202, with 72 illustrations. Berlin: Julius Springer, 1927.

Monographic consideration of the hypothesis of double innervation of muscles.

CLINICAL LABORATORY PROCEDURES. By George L. Rohdenburg, M.D., Director of Laboratories, Lenox Hill Hospital. The Macewen Memorial Lecture, 1927. Cloth. Price, $3.25. Pp. 266. New York: Macmillan Company, 1927.

Brief guide to laboratory tests usable by practitioners.

SUIS-JE SYPHILITIQUE? Fréquence de la syphilis héréditaire ou acquise ignorée. Tempéraments et syphilis. Les petits malaises et les troubles graves d'origine syphilitique méconnue. Par Dr. V. Scheikevitch. Paper. Price, 10 francs. Pp. 199. Paris: E. le François, 1928.

Popular presentation of the facts relating to syphilis.

LE TUBE DUODÉNAL, SES APPLICATIONS AU DIAGNOSTIC ET A LA THÉRAPEUTIQUE. Par Max Einhorn. Traduit par le Docteur Gustave Monod. Second edition. Paper. Price, 25 francs. Pp. 136, with 126 illustrations. Paris: Masson & Cie, 1927.

French edition of well known American handbook.

LA DIATHERMIE ET SES APPLICATIONS MÉDICALES. Par le Docteur Paul Duhem, électro-radiologiste de l'Hôpital des Enfants-Malades. Paper. Price, 10 francs. Pp. 71, with 17 illustrations. Paris: Gauthier-Villars & Cie, 1928.

Brief handbook on technic and uses of diathermy.

"AFTER ITS KIND." The First and Last Word on Evolution. By Byron C. Nelson, Th.M. Cloth. Price, $1.50. Pp. 144, with illustrations. Minneapolis: Augsburg Publishing House, 1927.

Another consideration of a subject which is again beginning to lose the public fancy.

INTERPRETERS OF NATURE—ESSAYS. By Sir George Newman, K.C.B., M.D., D.C.L., Chief Medical Officer Ministry of Health. Cloth. Price, $4.50. Pp. 296. New York: Oxford University Press, 1927.

Inspiring discussions of the lives of many prophets in medicine and biology.

CONVALESCENCE, HISTORICAL AND PRACTICAL. By John Bryant, M.D. Cloth. Price, $5. Pp. 269, with illustrations. White Plains, N. Y.: Burke Foundation, 1927.

Report of new knowledge relating to recovery after disease.

KONTRAST UND SCHÄRFE IM RÖNTGENBILDE. Von Dr. med. Willem Bronkhorst, leitender Arzst des Sanatoriums "Berg en Bosch" Apeldoorn. Fortschritte auf dem Gebiete der Röntgenstrahlen. Ergänzungsband 39. Archiv und Atlas der normalen und pathologischen Anatomie in typischen Röntgenbildern. Herausgeber: Prof. Dr. Grashey. Paper, Price, 15 marks. Pp. 104, with illustrations. Leipsic: Georg Thieme, 1927.

DIE ERREGER DES FLECK- UND FELSENFIEBERS. Biologische und pathogenetische Studien, auf Grund gemeinsamer Untersuchungen mit Dr. Med. Wanda Blühbaum, und Elisabeth Brandt. Von Dr. Phil. et Med. Max H. Kuczynski, a. o. Professor für Pathologie, Abteilungsvorsteher am pathologischen Institut der Universität Berlin. Paper. Price, 24 marks. Pp. 256, with 122 ilustrations. Berlin: Julius Springer, 1927.

DIE FERMENTE UND IHRE WIRKUNGEN. Von Prof. Carl Oppenheimer, Dr. Phil., et Med. in Berlin. Nebst einem Sonderkapitel physikalische Chemie und Kinetik. Von Prof. Dr. Richard Kuhn. Band III. Lieferung 1. Die Methodik der Fermente. Herausgegeben von Carl Oppenheimer, und Ludwig Pincussen. Fifth edition. Paper. Price, 28 marks. Pp. 320, with 181 illustrations. Leipsic: Georg Thieme, 1927.

HANDBUCH DER PATHOGENEN MIKROORGANISMEN. Von W. Kolle, und A. v. Wassermann. Band I. Lieferung 12. Allgemeine Morphologie und Biologie der pathogenen Mikroorganismen (Schluss). Von Prof. Dr. E. Gotschlich, etc., etc. Third edition by W. Kolle, R. Kaus, and P. Uhlenhuth. Paper. Price, 25 marks. Pp. 161-522, with 9 illustrations. Jena: Gustav Fischer, 1927.

HANDBUCH DER PATHOGENEN MIKROORGANISMEN. Von W. Kolle, und A. v. Wassermann. Band IV. Lieferung 8. Pseudotuberkulose. Von K. Poppe, etc., etc. Third edition, by W. Kolle, R. Krause, and P. Uhlenhuth. Paper. Price, 14 marks. Pp. 413-584, with 23 illustrations. Jena: Gustav Fischer, 1927.

HANDBUCH DER PATHOGENEN MIKROORGANISMEN. Von W. Kolle, und A. v. Wassermann. Band IV. Lieferung 11. Meningokokkeninfektionen. Von Prof. Dr. K. W. Jötten, etc., etc. Third edition by W. Kolle, R. Kraus, and P. Uhlenhuth. Paper, Price, 14 marks. Pp. 585-788, with 2 illustrations. Jena: Gustav Fischer, 1927.

HANDBUCH DER PATHOGENEN MIKROORGANISMEN. Von W. Kolle, und A. v. Wassermann. Band V. Lieferung 7. Infektionen durch Trichobakterien. Von Prof. Dr. O. Huntemüller, etc., etc. Third edition by W. Kolle, R. Kraus, and P. Uhlenhuth. Paper. Price, 27 marks. Pp. 320, with 114 illustrations. Jena: Gustav Fischer, 1927.

HANDBUCH DER PATHOGENEN MIKROORGANISMEN. Von W. Kolle, und A. v. Wassermann. Band VIII. Lieferung 9. Piroplasmosen. Von Prof. Dr. C. Schilling, etc., etc. Third edition by W. Kolle, R. Kraus, and P. Uhlenhuth. Paper. Price, 21 marks. Pp. 212, with 75 illustrations. Jena: Gustav Fischer, 1927.

HANDBUCH DER PATHOGENEN MIKROORGANISMEN. Von W. Kolle, und A. v. Wassermann. Band IX. Lieferung 10. Die Lungenseuche der Rinder. Von Prof. Dr. H. Dahmen, etc., etc. Third edition by W. Kolle, R. Kraus, and P. Uhlenhuth. Paper. Prict, 19 marks. Pp. 188, with 56 illustrations. Jena: Gustav Fischer, 1927.

THE MENINGIOMAS ARISING FROM THE OLFACTORY GROOVE AND THEIR REMOVAL BY THE AID OF ELECTRO-SURGERY. By Harvey Cushing, C.B., D.S.M., A.M., Professor of Surgery in Harvard University. Paper. Pp. 53, with 28 illustrations. Glasgow: Jackson, Wylie & Company, 1927.

LE MÉTABOLISME BASAL; SES APPLICATIONS EN CLINIQUE. Par Claude Gautier, médecin des Hôpitaux de Paris, et René Wolff, chef de laboratoire adjoint à la Faculté de médecine de Paris. Paper. Price, 15 francs. Pp. 172, with 11 illustrations. Paris: Gaston Doin, 1928.

UEBER ARRHYTHMIEN DES HERZENS. Aerztlicher Fortbildungskurs in Bad Nauheim Pfingsten 1927. Von Prof. Dr. Walter Koch, Prof. Dr. L. Haberlandt, und anderen. Paper. Price, 3.30 marks. Pp. 53, with 15 illustrations. Leipsic: George Thieme, 1927.

EL EMPLEO DEL ACEITE YODADO COMO MEDIO DIAGNÓSTICO EN LAS AFECCIONES BRONCO-PLEURO-PULMONARES. Tesis presentada para aspirar al grado de doctor. Por Luis Rosal Catarineu. Paper. Pp. 43, with 32 illustrations. Barcelona, 1927.

TWENTY-FIFTH ANNUAL REPORT, 1926-1927 OF THE IMPERIAL CANCER RESEARCH FUND UNDER THE DIRECTION OF THE ROYAL COLLEGE OF PHYSICIANS OF LONDON AND THE ROYAL COLLEGE OF SURGEONS OF ENGLAND. Paper. Pp. 11. London, 1927.

DIE MALARIATHERAPIE DER SYPHILIS. Von Dr. Josef Matuschka, und Dr. Rudolf Rosner. Mit einem Vorwort von Professor Dr. Ernest Finger. Paper. Price, 4.80 marks. Pp. 84. Vienna: Julius Springer, 1927.

ANNUAL REPORT OF THE SURGEON GENERAL OF THE PUBLIC HEALTH SERVICE OF THE UNITED STATES FOR THE FISCAL YEAR 1927. Cloth. Pp. 355. Washington: Government Printing Office, 1927.

ANNUAL REPORT OF THE SURGEON GENERAL U. S. ARMY TO THE SECRETARY OF WAR, 1927. Paper. Price 60 cents. Pp. 501. Washington: Government Printing Office, 1927.

TRAITEMENT DE L'ULCUS GASTRO-DUODÉNAL. Par Fidel Fernández-Martínez, professeur de pathologie digestive. Paper. Price, 12 francs. Pp. 138. Paris: Masson & Cie., 1927.

FORTY-FIRST REPORT (49TH YEAR) OF THE STATE DEPARTMENT OF HEALTH OF CONNECTICUT FOR THE YEAR ENDING JUNE 30, 1926. Cloth. Pp. 399. Hartford, 1926.

ESTUDIO RADIOLÓGICO DE LA APENDICITIS CRÓNICA. Por Gonzalo Esguerra Gomez. Cloth. Pp. 102, with illustrations. Bogota, 1927.

ANNUAL REPORT OF THE COMMISSIONER OF PUBLIC HEALTH OF QUEENSLAND TO 30TH JUNE, 1927. Paper. Pp. 37. Brisbane, 1927.

Medicolegal

Conditions of Employment and Infectious Disease

(Norton v. Barton's Bias Narrow Fabric Co. et al. (Conn.), 138 Atl. R. 139)

The Supreme Court of Errors of Connecticut, in setting aside a judgment which affirmed an award of compensation under the workmen's compensation law, says that the fact that a disease causing incapacity is due to infection not in itself traceable to the conditions of employment will not necessarily preclude compensation for incapacity resulting from it. *De la Pena* v. *Jackson Stone Co.,* 103 Conn. 93, 130 Atl. 89. In that case the conditions of employment were such as peculiarly to induce the onset of the disease, and the medical testimony agreed that those conditions might be the cause of the influenza from which the claimant suffered, and one physician gave it as his expert opinion that those conditions were the cause of the disease.

In the instant case the claimant worked near a window which certain other employees in the factory were accustomed to open a few minutes two or three times a day, a practice which was continued despite complaints she made to the foreman and to other representatives of the company. In February she was ill with a cold for a week. March 20, she became ill with grip, which was followed by pneumonia and empyema. The compensation commissioner found that her power of resistance was greatly lowered by the exposure to which she was subjected in the factory, and as a result of that exposure she developed the grip, followed by the pneumonia and empyema. But it was to be noticed, first, that the physicians agreed that grip is due to infection; secondly, that there was no claim that the infection in this case was in any way due to the conditions of employment; and, finally, that the most that could be claimed from the testimony was that those conditions were a factor in producing it. To what extent they contributed was in no way indicated, while the evidence suggested that it might well have been in only a minor way.

In the production of results many circumstances often play a part of so minor a character that the law cannot recognize them as causes. It is not sufficient that the conditions of the employment contributed to some undefined degree to bring on the disability from which the employee suffers. Before compensation can be awarded, a causal connection must be established between the employment or the conditions under which it is required to be performed and the injury.

Action for Alleged Negligent Bandaging—Evidence

(McCoy v. Clegg (Wyo.), 257 Pac. R. 484)

The Supreme Court of Wyoming, in affirming a judgment for $500 damages in favor of the plaintiff, says it was alleged that the defendant in setting a fractured collar bone negligently bandaged the right arm of the plaintiff, at the elbow, so that the circulation in the arm was cut off, and left the arm so bandaged for about a week, during which time the bandage cut into the flesh and injured the arm. The defendant testified that the collar bone was fractured at the junction of the outer and middle third, which he treated by applying a Sayre dressing and a Velpeau over that. That was on Sunday night. He called each day to see the patient and did not notice any indication of complications until Saturday night, when he was discharged from the case, at which time he saw some trophic disturbance and nerve injury causing blisters and a bad condition at the elbow. When the plaintiff rested her testimony, the defense moved for a directed verdict, on the ground of insufficient evidence to sustain the averments of negligence or the result of the defendant's treatment, and also on the ground that no evidence had been offered to show the amount or measure of damages. That motion was overruled. Without going into a detailed explanation, in this connection, of its view of the evidence submitted by the plaintiff, the court thinks it was sufficient as against the motion. It also holds that it is not necessary in a case of this kind for the plaintiff to prove by valuation, estimates or computation the amount necessary

to compensate for alleged injuries. The law provides no exact measure of damages for such injury in an action based on negligence. The amount of damages, if any be allowed, was a matter to be determined by the jury under proper instructions.

It was contended that there was error in admitting the testimony of a physician that bandaging the elbow as it was bandaged he considered improper. The supporting argument was that under the guise of a hypothetical question the witness was in fact asked to state his opinion on the ultimate fact in issue, namely, negligence in bandaging the arm at the elbow. But the witness was a medical expert witness, and was authorized to give the kind of answer that was given —an opinion. The witness was asked whether such bandaging was proper treatment, and his answer was clearly an opinion based on his knowledge of the science of his profession, and the question called for that kind of an opinion only. Counsel argued that there is a distinction between improper and negligent treatment. But the witness did not say that the defendant's treatment was negligence. While the expert witness may not, as a rule, say that, he may say, if that be his opinion, and he is properly interrogated, that the treatment was improper. It is no doubt true that there might be improper treatment by a skilful surgeon, honestly and carefully exercised, but based on a mere error of judgment. And whether or not it would be a mere matter of judgment would probably remain a question for the jury to be determined on evidence submitted, principally the evidence of medical experts.

It is well settled with respect to matters involving peculiar skill, science or knowledge that witnesses possessing the requisite understanding, and called "experts," may testify, not only to the facts, but also to their opinions regarding such facts; such things being considered necessary for the enlightenment of the jurors, in order to enable them to arrive at a just verdict. The objection to the testimony of the physician was not well taken. The same may be said respecting another objection to his testimony, namely, that in his opinion the manner in which the elbow was bandaged caused the injury complained of. This court thinks that was competent.

The court thinks it ought to be said that it thinks it may have been irregular to permit only a portion of the jurors to feel of the arm, whatever the purpose thereof, but that it could not be reasonably held to be prejudicial or reversible error in this case.

The court instructed the jury that "proof of negligence need not be by direct testimony, but may be inferred by the jury from all the facts and circumstances in evidence in the case, if they be sufficient to warrant it." This instruction should not be regarded as intended to have or as having in the case at bar the effect of the res ipsa loquitur (the thing speaks for itself) rule. Still the instruction should not be given in a malpractice case of this kind, in which the alleged specific acts of negligence refer entirely to diagnosis or the method of treatment. The res ipsa loquitur rule was very clearly not applicable to the facts and circumstances of the case at bar.

Action for Malpractice Commenced in Due Time

(Armbruster v. Harrison (Ohio), 157 N. E. R. 391)

The Supreme Court of Ohio says that this was an action for malpractice, which was required to be commenced within one year after the cause of action accrued, under the statute of limitations governing it. The suit was in fact filed only three days before the period of limitation, and a summons was issued the same day, Feb. 18, 1926. Moreover, service was made by the sheriff and returned and filed by him, February 18. But the service was defectively made, and on March 13 the defendant filed a motion to quash, which was sustained, April 2, right after which an alias summons was issued, which was returned by the sheriff, April 3, showing proper and sufficient service. April 30, the defendant filed a motion to quash the service on the alias summons, and also a motion to dismiss for the reason that the action was barred by the statute of limitations. If the service of the alias summons did not constitute a commencement of the action within the time, it must be conceded that the cause should have been dismissed on the ground of being barred by limitation. The case involved an interpretation of section 11231 of the code of Ohio, which provides:

> Within the meaning of this chapter, an attempt to commence an action shall be deemed to be equivalent to its commencement, when the party diligently endeavors to procure a service, if such attempt be followed by service within sixty days.

The trial court heard the motions to quash and to dismiss, June 26, decided them, August 14, and ordered that the petition be dismissed on the ground that it was barred by the statute of limitations. The court of appeals affirmed that judgment. No evidence was introduced on the question of the plaintiff's diligence in endeavoring to procure a service, and the trial court must therefore have determined the question of diligence on the undisputed facts as shown by the record. The ruling of the trial court, as affirmed by the court of appeals, was therefore equivalent to declaring as a rule of law that the failure to issue the alias summons earlier than April 2 constituted a want of diligent endeavor.

The case of *Ross, Sheriff* v. *Willet*, 54 Ohio St. 150, 42 N. E. 697, was a parallel one in every way, except that it was a proceeding in error in an appellate court instead of an action in a trial court. The court in that case first decided that section 4988 of the revised statutes, now section 11231, general code, applied by analogy, and as a second proposition decided that the facts of that case showed a compliance with the requirements of the statute. In the interest of uniformity as well as in the interest of substantial justice, the rule declared in that case should be affirmed, and the judgment of the court of appeals in the instant case reversed.

Falsely Stating Kidney Removed—Action Not Barred

(Netzel v. Todd (Ohio), 157 N. E. R. 405)

The Court of Appeals of Ohio, Lucas County, in reversing a judgment on a verdict directed for the defendant, says that the petition stated two causes of action. The first cause of action was for alleged malpractice in failing to remove a diseased kidney. The second cause of action incorporated the allegations of the first and then pleaded fraud on the part of the defendant in falsely representing to the plaintiff that the diseased kidney had been removed.

This court is of the opinion that the evidence did not disclose that there was any fraud committed which would give rise to a right of action independent of malpractice. It does not constitute a cause of action for a physician to make false representations that he has removed one of the patient's kidneys, when the physician is not guilty of any act of malpractice in failing to remove the kidney during an operation or in his treatment of the patient in connection with it.

Was the plaintiff's action for malpractice barred by lapse of time? Under section 11225, general code of Ohio, a right of action for malpractice would be barred by the statute of limitations in one year after the accrual thereof. It is well settled in Ohio that the relation of surgeon and patient is one arising out of contract, express or implied, and that an action for malpractice committed during the continuance of the contract relation will not be barred until the expiration of one year after the contract has terminated.

The gist of the action pleaded by the plaintiff in the first cause of action was that the defendant was guilty of malpractice in failing to remove the plaintiff's kidney during the period from December, 1916, to Aug. 14, 1923. It was certain, if the plaintiff's testimony was to be believed, that the relation of surgeon and patient existed from the time the defendant sent him pills in January, 1923, until the last one was taken under the defendant's instructions on August 8 of that year; and if the duty to remove the kidney existed in December, 1916, the inference could be drawn that that duty existed during the period referred to in 1923. The jury might well have found that the defendant was guilty of malpractice in failing to remove the kidney during that period, and if so the right to recover would not be barred. This view was especially well founded in view of the expert evidence offered by the plaintiff tending to show that during the said period in 1923 proper treatment of the plaintiff required something more than the administering of pills, namely, the taking of a

functional test, consisting of catheterization of the kidneys to ascertain their condition, the opening up of an abscess to allow the pus to escape, and the consideration of doing more than opening up the abscess by removing the kidney. There was evidence tending to show that there was no mutual understanding that the relation of surgeon and patient should cease and that no notice was ever given by the surgeon to the patient that the relation was at an end. In fact, while taking the pills under the last prescription, the plaintiff was acting under the directions of the defendant. Under the circumstances there was some evidence tending to show that the relation of surgeon and patient existed as late as Aug. 8, 1923, and that an act of malpractice was committed during such period in 1923. The court therefore erred in holding that as a matter of law the cause of action was barred by the statute of limitations when this action was brought by the plaintiff on July 21, 1924.

However, this court does not feel called on at this time to determine whether any such alleged act committed prior to January, 1923, was barred or not, nor to determine at this time whether or not relation of surgeon and patient was continuous from the first employment in December, 1916, down to Aug. 8, 1923. These questions were not raised by the record.

Opinions from Necropsy Versus Hypothetical Question

(Nicholson v. Roundup Coal Mining Co. et al. (Mont.), 257 Pac. R. 270)

The Supreme Court of Montana, in reversing a judgment which affirmed an order of the industrial accident board denying an award for the death of a miner, says that the miner, having finished his work for the day, was at liberty to go home before the usual time for the change of the shift. In the outer air the thermometer stood at 28 degrees below zero and the temperature within an "air course" through which he had to pass was the same as that outside, while the temperature in the workings of the mine stood at from 80 to 100 degrees higher. The miner entered the air course through a door and his body was found a short distance from the exit. At the periods of the day when shifts were changed a large fan that forced air into the mine was shut down so that the men might traverse the air course without encountering the usual draft of air down the course, but those who completed their day's work before the change of shifts and were permitted to leave the mine had to pass out through the air course with the fan running. Two physicians who performed a necropsy submitted a joint affidavit in which they stated that they found the man's heart in a diseased condition, known as tricuspid stenosis, which they believed caused his death. Another physician, in answer to a hypothetical question based on all the evidence, to which he had listened, gave it as his opinion that death was caused from shock causing inhibition of the heart, to which the heart condition was a predisposing condition.

The industrial accident board held that the only competent evidence as to the cause of death that had been produced or could be produced was the sworn statements of the physicians who performed the necropsy, and, by its method of disposing of the claim, the district court, in effect at least, adopted that ruling. The ruling was clearly erroneous. The question as to the cause of death was one of fact to be determined from all the surrounding circumstances; and the expert opinion of a physician and surgeon, based on a proper hypothetical question, is always competent as to that question. With the evidence as to the surrounding circumstances before him, the physician who answered the hypothetical question was in a more advantageous position to give an intelligent answer to the question than were the physicians who performed the necropsy at the time they made the statement referred to by the board; and, on being questioned with reference to the surrounding circumstances, their testimony did not rebut that of the other physician. The evidence warranted a finding that the miner's death resulted from shock as a result of passing from the high temperature of the workings to the low temperature of the air course, to which result of shock he was predisposed by his heart condition.

Regardless of the fact that there was no accident "in the common understanding of the term," as declared by the board, did the evidence disclose an "industrial accident" within the meaning of the workmen's compensation act, arising out of and in the course of the employment? Under the great weight of authority, as the evidence clearly showed that the miner was subjected by his employment to the special and peculiar risk and danger of traveling, at the time of his death, against an artificial current of air sufficient to cause distress in a normal man, and possibly to have caused the death of such a one, and certainly to increase the burden on the heart, and that, in the diseased condition of the miner's heart, this special burden did in fact accelerate the disease and hasten the fatal termination, if not the sole proximate cause of death, his death resulted from an industrial accident arising out of and in the course of his employment, and demanded the payment of compensation.

Damages for Traumatic Cataract—Regarding Operation

(Cero v. Oynesando et al. (R. I.), 138 Atl. R. 45)

The Supreme Court of Rhode Island, in overruling exceptions to a verdict of $2,500 damages for the plaintiff, a laborer, aged 43, who was struck over the eye with a hammer, says that the chief resultant injury was the development of a traumatic cataract in the right eye, and that this action was brought for assault and battery. The defendants took exception to the verdict as excessive, basing their claim that it was on the contention that the preponderating evidence showed that an operation would probably restore the sight of the eye.

It is the duty of a person injured, as was the plaintiff, to use due care and diligence under the circumstances to effect the cure of his wounds and reduce the damages. In *O'Donnell v. R. I. Co.*, 28 R. I. 245, 66 Atl. 578, the court approved an instruction that, if the jury thought that a reasonable person would submit to an operation, then it was the plaintiff's duty either so to do or to suffer the risk of having his recoverable damages diminished. This does not mean that the court or jury can lay it down as legal duty that an injured person must submit to an operation. Consultation with a competent physician and following the prescribed treatment discharges the plaintiff's duty to a tort-feasor (wrongdoer). Whether, and to what extent, a person shall submit his body to physical mutilation is so peculiarly personal that the law does not allow a jury or court to decide this for the individual.

If, however, the evidence showed that an operation such as an ordinary prudent and reasonable man would undergo would probably improve or cure the plaintiff's condition, it could not be said that a continuance of the sightless condition was the natural and proximate cause of the injury inflicted by the defendants. Under such circumstances the plaintiff, having available modern surgical science, might not be permitted to decline to take advantage of an opportunity to be cured or improved and charge the continuance of blindness to the defendants. In such an event an award of damages based on the theory of permanent loss of sight would be excessive.

In the case at bar the propriety of an operation as bearing on the question of damages was presented to the jury. It was true that an eye specialist said that such operations were successful in 98 per cent of the cases under ideal conditions, but he did not know whether the plaintiff was in physical condition to undergo the operation, and of course he could not guarantee ideal conditions or competence of the chosen operator, or promise cure or improvement. Under such circumstances it was a fair question for the jury whether the plaintiff ought to undergo the operation or suffer his damages to be diminished. The jury evidently declined to diminish the plaintiff's damages because of his failure to undergo an operation, and this court cannot say that the jury erred. The plaintiff's physician never had advised an operation, and the defendants were not entitled to claim that the plaintiff must accept or follow the advice of the particular surgeon offered by the defendants. The plaintiff never refused to undergo an operation, and, even if he had, his damages might not be diminished by reason of such refusal when the operation was a major one and might or might not result in betterment. In the instant case the plaintiff had merely failed to do something which the defendants' physician alone had suggested

as containing a probability of cure. Such evidence as an aid in considering the actual damages sustained is proper but not conclusive.

Permanent loss of sight of one eye and consequent shrinkage in earning capacity in a laborer 43 years of age is not excessively compensated by an award of $2,500, particularly if, as here, punitive damages may account for a portion of the award.

Society Proceedings

COMING MEETINGS

American College of Physicians, New Orleans, March 5-9. Mr. E. R. Loveland, The Covington, 37th and Chestnut Streets, Philadelphia, Sec'y.

SOUTHERN SURGICAL ASSOCIATION

Fortieth Annual Session, held at Augusta, Ga., Dec. 13-15, 1927

The President, DR. GUY L. HUNNER, Baltimore, in the Chair

Brain Tumors; Analysis of One Hundred Cases

DRS. CHARLES E. DOWMAN and W. A. SMITH, Atlanta, Ga.: Analysis of the so-called general symptoms showed that some may have characteristics of localizing value. Headaches were present in 81 per cent and were the first symptoms in 37 per cent. Sharp shooting pains in the head occurred in a few cases and were the outstanding symptoms in a case of lateral ventricle tumor. Vomiting occurred in 54 per cent and was the first symptom in 2 per cent. Fifty-three per cent presented visual disturbance, while 86 per cent showed fundus changes and 55 per cent showed marked choking. The visual fields showed important changes in 16 per cent. Complex visual hallucinations occurred in one case of temporal lobe tumor. Convulsions occurred in 37 per cent, and in 65 per cent of these there were features of localizing value. Mental disturbances occurred in 31 per cent, and the earlier they developed the more anterior was the tumor. Loss of smell occurred in ten cases, and was especially significant in tumors overlying the cribriform plate. The roentgen-ray examination gave valuable localizing aid in 21 per cent and, combined with ventricular studies, in 39 per cent. Seventy-five per cent were localized on neurologic examination alone and 14 per cent additional with the aid of ventricular studies. Eighty-nine per cent were thus correctly localized before operation. The average duration of symptoms before a diagnosis of brain tumor was made was 27.5 months. The various localizing features are discussed in detail. Most cases began with symptoms due to increased intracranial pressure, except in those tumors of the rolandic region and cerebellopontile angle in which the first symptoms were of localizing significance. There were 142 operations performed. A few of the patients were moribund when admitted. Twenty-four of the 100 patients are now living, from ten months to ten years after the development of symptoms. Of the seventy-six dead, some lived as long as eight years after the development of symptoms.

Surgery of the Spinal Cord

DR. ERNEST SACHS, St. Louis: The various types of lesions in which laminectomy may be indicated can be grouped under the following seven headings: (1) fractures and dislocations of the spinal column; (2) inflammatory processes (meningitis, abscesses or solitary tubercles); (3) compressions of the cord due to deformities; (4) spasticities due to inflammatory diseases, cerebral birth palsies or old injuries; (5) spinal tumors; (6) relief of intractable pain, and (7) congenital defects (spina bifida). Particular emphasis is laid on the application of the Queckenstedt test in determining the cause of cord symptoms. The point is made that, with a normal Queckenstedt test, operation does not offer much prospect of relief, while, with a block, there is probably pressure on the cord. In the second group, attention is called to the desirability of spinal drainage for meningitis, and that if drainage is instituted early, some patients can be saved. In the third group, the cord is compressed over a marked angulation in the vertebral column, and on splitting the dura very prompt relief is obtained. Under the fourth heading, particular attention is drawn to the relief of spasticity by the Foerster operation, cutting the posterior roots, an operation which had a good deal of vogue some fifteen years ago but has fallen into disuse. The reason for this in great part is due to the improper selection of cases and not instituting prolonged after-treatment. In well selected cases it is extraordinary how a spastic extremity is changed to a flaccid one. Spinal cord tumors, in the vast majority of cases, are encapsulated and benign, differing in this respect from brain tumors.

Epithelial Neoplasm of Peripheral and Cranial Nerves

DR. ISIDORE COHN, New Orleans: Three cases of nerve tumor are presented. In the first case, a patient with von Recklinghausen's disease presented a tumor of a peripheral nerve. The tumor resembled a carcinoma. After excision of the tumor, a recurrence in the proximal stump of the medium nerve appeared. Histologically, this resembled the primary tumor. A second recurrence necessitated amputation. The patient remained well for at least four and one-half years, but since that time we have been unable to trace him. The tumor was epithelial in character. It caused expansion of the nerve and disturbance of the peripheral distribution of the nerve. There were no distant metastases. I believe that this tumor had its origin in the cells of the sheath of Schwann. In case 2 there was an epithelial neoplasm of the radial nerve associated with neoplasms of the lung, heart, liver, brain, dura, calvarium and suprarenals. The patient had a cough, hemoptysis and profuse purulent expectoration. He had been treated for several months for tuberculosis. He presented himself for examination after a tumor of the radial nerve had been excised. The recurrent tumor at the original site was larger than the primary growth. A tumor of the scalp was later found to be malignant. Prior to death, the patient developed a progressive weakness of the left side of the body. Autopsy revealed a carcinoma of the right lung, skull, dura, brain, kidney, liver, suprarenal, heart and pericardium. This case illustrates a type of malignant epithelial neoplasm which not only recurs in the original nerve but may involve other peripheral nerves. The nature of the tumor cannot be definitely stated. It seems likely that the primary growth in this case was in the lung. Neoplasms of the peripheral nerves associated with evidence of pulmonary lesions should certainly direct attention to the lung as a factor before resorting to operative intervention. In case 3 there was a solitary, encapsulated spinal accessory nerve tumor, which developed along the course of one of the cranial nerves, and seems to fall in the same class as neurinoma and the acoustic neuroma.

Embolectomy

DR. JOHN DE J. PEMBERTON, Rochester, Minn.: Since September, 1927, I have performed arteriotomy, with removal of obstructive embolus, four times in three patients. The vessels involved were the common femoral, the aorta at its bifurcation, the common iliac and the superficial femoral.

Treatment of Brain Abscess

DR. C. C. COLEMAN, Richmond, Va.: From experience with a series of encapsulated abscesses and an analysis of the experiences of others, I have tentatively reached the following conclusions: 1. There are a number of types of localized intracranial suppuration, and treatment suggested for one may be entirely unsatisfactory in another of these types. Encapsulated abscess offers a good prognosis if accurately localized and properly treated. 2. The cause of death from operated abscess is nearly always a septic encephalitis brought on by efforts at drainage of the abscess. There appears to be little danger of a fatality after a partial collapse of the abscess by tapping, provided pus does not escape from the abscess into the surrounding brain tissue. 3. I prefer to drain encapsulated abscess, but I believe this drainage should be done through a trephine opening made under local anesthesia and that the type of drainage best suited is a small, soft rubber catheter. It is important to approach the abscess

at the point nearest the cortex, but such a point cannot always be determined. Simple tapping of an encapsulated abscess is to be preferred to drainage if drainage is accomplished under great difficulty, or when many attempts are made to insert the drainage tube into the abscess cavity.

Bloody Cerebrospinal Fluid

DR. CHARLES BAGLEY, JR., Baltimore: In twenty-one cases, bloody cerebrospinal fluid resulted from simple birth trauma, congenital anomalies of the vessels in young people, cerebral symptoms, cerebral aneurysms, brain tumors, cerebral arteriosclerosis and cerebral trauma in adults. Irrespective of cause, bloody cerebrospinal fluid produces symptoms in themselves demanding specific treatment. The immediate outcome depends on the amount of blood in the fluid; the ultimate outcome, on the lesion underlying the hemorrhage. The mixture of blood and cerebrospinal fluid produces a meningitis, the immediate symptoms being so mild as to be overlooked and the condition passing some weeks later into a chronic state. Correct diagnosis is important because of the simplicity of treatment—lumbar puncture in cases that have not progressed too far, and subarachnoid drainage over a period of several days in the advanced cases.

Cranial and Intracranial Injury in the New-Born

DR. DONALD MUNRO, Boston: The diagnosis of intracranial hemorrhage of the new-born must be expanded to include cerebral edema and fracture of the skull, and should read cranial and intracranial injury in the new-born. Postmortem gross and microscopic studies conducted in forty-five out of fifty-six primarily fatal cases show that meningeal and intracortical hemorrhage, congestion and edema are the most common pathologic entities. Forty-eight out of fifty-eight babies discharged living and relieved have been followed up to December, 1927. Thirty-nine of the forty-eight may be classed as cured, the other five being still too young to allow for a satisfactory estimation of the end-result. The most common late result of cerebral injury in the new-born is hydrocephalus associated with either epilepsy or idiocy. Active treatment in this series was limited to lumbar decompression after recovery from surgical shock. In the hemorrhagic disease group intramuscular parental blood was also given. Depressed fractures were elevated as soon as possible. Ventricular puncture was done twice, as was a typical subtemporal decompression.

Acute Intussusception in Infants

DR. ROBERT L. GIBBON, Charlotte, N. C.: My series comprises twenty-five consecutive cases, with twenty-five operations and one spontaneous reduction of the intussusception. One infant, aged 6 months, was reoperated on for a recurrent ileocolic intussusception three months after the first operation. He has since remained well. All but three patients were under 1 year of age: the oldest was 7 years, the youngest 3 months. Out of the entire series, there were only six females. The majority of the intussusceptions were of the typical ileocolic type. There were two purely enteric intussusceptions, in which resection of the terminal ileum was done for gangrene, with death in each case. A Meckel's diverticulum was the cause in a girl of 4 years, in whom resection was done, followed by death. There were two cases of compound intussusception. After the mass in the colon had been reduced, there was still an intussusception of the small bowel with the apex in the cecum and colon. Of the twenty-five operations, there were seven deaths, an operative mortality of 28 per cent. Of these seven deaths, there were five resections, which means that the diagnosis or the institution of surgical treatment was too long delayed in five cases. One of the other two patients who died was a boy, aged 8½ months, who had been ill for three or four weeks with ileocolitis, and in whom an ileocolic intussusception was a complication. He died about twelve hours after operative reduction of the intussusception. In the other case, although reduction was not difficult, the baby did not survive the operation many hours. There seemed to be an unusual degree of toxemia present. In the whole series the only symptom that was constantly present was the periodic paroxysm of abdominal pain, abrupt in onset, usually associated with evidences of shock, as indicated by the striking pallor and rapid pulse, and soon followed by reflex vomiting. The appearance of blood and mucus in the stools was a variable symptom. Fever was usually present, although in the early stages it was absent. The finding of a tumor has not always been possible. Marked distention of the abdomen was present in only six cases and was moderate in a seventh. These are the seven fatal cases, and it may therefore be considered of very ominous import. Fluoroscopic examination after a barium enema was used seven times. In each case it gave positive results. The earliest operation of the series was seven hours after onset and the latest five days.

Recurrent Duodenal Obstruction

DR. J. A. DANNA, New Orleans: There is a group of patients suffering from symptoms due to continued or recurrent, complete or incomplete, obstruction of the duodenum, many of whose cases are being diagnosed gallbladder disease, duodenal or gastric ulcer, gastric neuroses or migraine. The symptoms range from an occasional headache, a constant or intermittent vague soreness or slight pain in the right or upper abdomen, or occasional vomiting or belching, to severe acute attacks with all the signs of high acute intestinal obstruction with prostration and shock that may be repeated at varying intervals. The clinical history, symptoms and roentgen-ray, especially fluoroscopic, observations, permit a positive diagnosis in the great majority of cases. Medical treatment will help some patients but will not cure most of them. Duodenojejunostomy is a comparatively safe procedure in these cases and offers the best promise of permanent relief.

Spontaneous Rupture of the Spleen with Venous Thrombosis

DR. J. SUMTER RHAME, Charleston, S. C.: A white man, aged 25, was apparently well and suffered a spontaneous rupture of the spleen immediately after dinner. The spleen was removed and the patient recovered. There was no gross or microscopic disease of the spleen, except a minor arteriosclerosis and a recent thrombosis of the veins in the spleen. There was no evident reason for this thrombosis and it may have been simply the thrombosis of a bleeding vessel.

Superfecundation: Twin Pregnancy in a Twin Uterus

DR. JERE LAWRENCE CROOK, Jackson, Tenn.: A colored woman, aged 21, gave birth, Aug. 20, 1927, to a 3½ pound (1.6 Kg.) normal girl, at the expiration of exactly seven months from the time of conception. October 10, the patient was in labor again with apparently a full sized child in her abdomen. Roentgenograms revealed a full sized baby in the abdomen. The patient's condition was very poor, so we decided to build her up as much as possible and let her proceed to term, which would be in one more week. One week later, labor having been in progress a short time, ineffectually, it was decided that under no possible conditions could nature effect delivery of the child. We therefore performed a cesarean operation, and removed a 6 pound (2.7 Kg.) full sized, normal female child which had apparently been dead for ten days or more. The placenta and cord were gangrenous and apparently had become an integral part of the lining of the uterus. The uterine structures were in a partial statement of decomposition; therefore, a double hysterectomy was performed. The uterus from which the child had been expelled seven weeks previously was found in a normal state of involution. In attempting the removal of the second or twin organ I found that about 24 inches of ileum was firmly embedded in the wall of the second uterus to such an extent that the uterine peritoneal coat had to be cut away in order to keep from tearing into the bowel. The appendix was nearly 9 inches long, 7 inches of which was incorporated with the peritoneal coat of the second uterus. I could not find the cervix of the second uterus. I amputated the first uterus, and cut across the second uterus, leaving the two firmly attached. I removed both tubes and ovaries from each, the second tube and ovary being incorporated with the uterine structures and the first tube and ovary being in normal position.

(To be continued)

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in America for a period of three days. No foreign journals are available prior to 1921, nor domestic prior to 1923. Periodicals published by the American Medical Association are not available for lending, but may be supplied on order. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested).

Titles marked with an asterisk (*) are abstracted below.

American J. Diseases of Children, Chicago

34: 923-1106 (Dec.) 1927

*Sickle Cell Anemia in Children. A. J. Bell, Cincinnati, and Others.—p. 923.
*Celiac Disease (Chronic Intestinal Indigestion). L. W. Sauer, Evanston, Ill.—p. 934.
Intradermal Saline Test in Serum Sickness. W. L. Bradford, Rochester, N. Y.—p. 950.
*Rickets in Negro: Treatment with Ultraviolet Rays. S. A. Levinsohn, Paterson, N. J.—p. 955.
*Tuberculosis of Cervical Lymph Nodes in Infancy: Value of Roentgen Ray in Diagnosis. E. C. Dunham and A. M. Smythe, New Haven, Conn.—p. 962.
*Congenital Heart Block. R. McIntosh, New York.—p. 965.
*Scarlet Fever: I. Relation Between Antitoxin in Blood and Skin Sensitivity to Toxin in New-Born Infants and in Their Mothers. J. V. Cooke, H. R. Keith and L. Ermatinger, St. Louis.—p. 969.
*Fever in New-Born. R. M. Tyson, Philadelphia.—p. 979.
*Icterus Index in Children. R. Taylor, Minneapolis.—p. 989.
*Seasonal Variation in Infants' Serum Calcium. H. Bakwin and R. M. Bakwin, New York.—p. 994.
*Estimation of Renal Efficiency of Children: Excretion of Nitrogen. I. M. Rabinowitch and R. Breitman, Montreal.—p. 1000.
*Blood and Cerebrospinal Fluid Sugar. H. G. Grayzel and E. R. Orent, New York.—p. 1007.
*Epilepsy in Children: Ketonuria, Ketogenic Diets. I. McQuarrie and H. M. Keith, Rochester, N. Y.—p. 1013.
*Erysipelas: Treatment. E. S. Platou, F. W. Schlutz and L. Collins, Minneapolis.—p. 1030.
*Bacteriology of Dried Powdered Milk Preparations Used in Infant Feeding. G. F. Dick and G. H. Dick, Chicago.—p. 1040.
*Tuberculin Tests in Children. A. G. DeSanctis, New York, and H. A. Reisman, Jamaica, L. I.—p. 1042.
Congenital Atresia of Colon. N. J. Heckel and C. W. Apfelbach, Chicago. —p. 1050.

Sickle Cell Anemia in Children.—A case of sickle cell anemia in a colored boy, aged 18 months, is reported by Bell et al. Splenectomy was not followed by any change in the sickling of the erythrocytes. There was temporary improvement in the anemia after operation, which may have been merely coincidental. Six months after operation, marked anemia was present. The following observations were made in this case: an enormous number of nucleated erythrocytes; a large number of reticulated erythrocytes; decreased fragility of the erythrocytes; the assumption of normal shape by the sickle-shaped erythrocytes on standing in moist preparations; the presence of myelocytic cells; an indirect van den Bergh reaction in the blood; failure of the erythrocytes or serum to cause symptoms when injected into rabbit; failure of normal serum to cause sickling of the patient's cells; failure of the patient's serum to cause sickling of his own repeatedly washed cells. A second case is reported by two of the authors (Cooley and Lee). Here, too, the spleen was removed. The patient feels well at this time and plays as vigorously as any child. The condition presented in this case is that of a "compensated" hemolytic anemia.

Celiac Disease.—Three cases are reported by Sauer. He says that the celiac syndrome disappears when fresh cow's milk, carbohydrate and fats are omitted. Their premature addition or inclusion is likely to provoke an exacerbation. Noxious intestinal products, probably formed by bacterial action on these foods, play an important rôle in etiology. The disease has never been produced experimentally, but circumstantial evidence leads to the hypothesis that it might be transmitted from one child to another. Prognosis depends on the diet rather than on the severity or duration of the disease. A standard, three-phased high protein diet yielded rapid and permanent results in a majority of the twenty-five patients for whom it has been prescribed during the past seven years. The first phase consists of feeding only powdered protein milk made into a paste with Ringer's solution, with the addition of saccharin. In the second phase, the Ringer's solution is omitted, and gradually curd, without whey, lean beef juice, cottage cheese, scraped beef and egg are added. In the third phase carbohydrates are added—well cooked cereals, corn syrup, zwieback—and well cooked vegetables and meats. Bread, potato, sugar, ice cream, candy, cake and fresh milk should never be added within the first year, and preferably not until the end of the second year of treatment. Should parenteral infections, hot weather, overfeeding or premature additions to the diet precipitate an exacerbation, then phase 1 should be resumed without delay.

Treatment of Rickets with Ultraviolet Rays.—A negro infant with an advanced case of rickets was treated by Levinsohn with the ultraviolet rays. Healing began in three weeks, and the child was cured in six weeks. Pigmented skin does not appear to have a retarding effect on the curative action of ultraviolet rays in rickets, since they do not have to penetrate the pigment in order to activate the cholesterol in the epidermal cells. This antirachitic cholesterol can be absorbed by the capillaries of the skin to exert its systemic effect.

Roentgen-Ray Diagnosis of Tuberculosis of Lymph Nodes.—The two cases reported by Dunham and Smythe are of interest because the demonstration of calcification in the lymph nodes of the neck by means of the roentgen ray made the diagnosis of tuberculous infection of these nodes certain at an early age, in one case at 5 months. Both infants described in the reports are living and well at the ages of 3½ years and 22 months, respectively. The local condition in the neck remains unchanged in both instances.

Congenital Heart Block.—A case of complete heart block, associated with congenital malformation of the heart, in a child, aged 7 months, is presented by McIntosh. The area of cardiac dulness extended from the midline to a point 1.5 cm. beyond the left nipple line. The point of maximum impulse was located 1 cm. lateral to the left nipple line in the fourth intercostal space. A thrill could not be felt. The heart rate was slow, from 60 to 64, but the rhythm was regular, and the rate appeared to be independent of bodily activity. A prolonged systolic murmur was audible all over the chest, but was loudest at the apex. The radial pulses were equal and easily obtained. The electrocardiogram established definitely the existence of a complete structural block in the bundle of His, with resulting auriculoventricular dissociation. The child died one month later. Autopsy was not performed.

Sensitivity of Skin of New-Born to Scarlet Fever Toxin.—Cooke et al. conclude that in the new-born, the skin is usually not sensitive to considerable doses of scarlatinal toxin, although occasionally some sensitivity is present. This lack of skin sensitivity is not due to the presence of antitoxin. After some weeks, the skin may develop sensitivity, which is evidenced first by positive reactions to larger amounts of toxin. During the first months of life, skin sensitivity appears in a larger proportion of infants who had no antitoxin in the blood at birth than in those whose blood contained antitoxin.

Fever in New-Born.—Of 1,972 babies whose histories Tyson analyzed, fever developed in 224. There is no apparent relation between its occurrence and excessive summer heat. It is of about equal frequency in babies of multiparous and of primiparous mothers. There is a distinct relation between excessive loss of weight and occurrence of fever. Processes of immunity of the child and bacterial invasion are important factors. Helping the baby secure its full quota of breast secretion, both colostrum and breast milk, in the first few days of life appears to be the best means of preventing fever.

Icterus Index in Children.—Taylor asserts that in infants born prematurely the bile index remains high for weeks or even for months after manifest icterus neonatorum has disappeared. The normal index which is then reached is definitely lower than the normal index for the adult. Determinations of the icterus index provide a method for studying the function of the liver in infants and in children and for furthering an understanding of the nature of some forms of indigestion and diarrhea. Such determinations may help to elucidate the nature of certain types of anemia in infancy, and from time to time will be of decided diagnostic impor-

tance. They will distinguish hemolytic from secondary anemia. They will, as in a case quoted, help to make the diagnosis between appendicitis and disease of the biliary tract, and will serve as the best method of determining whether a manifest jaundice is increasing or diminishing.

Seasonal Variation of Serum Calcium.—The Bakwins found that the serum calcium of infants shows a definite seasonal variation, the drop beginning during the autumn, reaching the lowest point during the early spring months and then rising as summer approaches. At least two factors are responsible for these fluctuations: the seasonal variation in the amount of available ultraviolet radiation of the sun and the large number of infections during the winter months.

Testing Kidney Function in Children.—Rabinowitch and Breitman assert that for children the urea concentration factor test is a means of determining renal efficiency so far as excretion of nitrogenous substances is concerned.

Blood and Cerebrospinal Fluid Sugar.—Grayzel and Orent emphasize the fact that if the sugar content of the cerebrospinal fluid is to have any diagnostic significance, it must be determined on fluid that has been obtained from a fasting person, preferably after a fast of ten hours or more.

Study of Epilepsy in Children.—The variations during the day in the rate of excretion of acetone bodies have been determined by McQuarrie and Keith in a series of normal and epileptic children on ketogenic diets. When the diet was entirely consumed in either three or four equal meals, at five hour intervals, variations in the intensity of ketonuria were found to describe a characteristic curve with its peak in the late afternoon and its lowest level during the hours between 3 and 9:30 a. m. As there appears to be a direct relationship between the degree of ketosis and the effectiveness of the diet in preventing epileptic seizures, the wide variations in the degree of ketosis indicated by this curve probably account for many apparent failures in this form of treatment. To be satisfactory, the diet must be so adjusted that the minimal level of ketosis for the day is raised well above the threshold at which seizures occur. The diet must be adjusted to meet the particular requirements of each person as regards: (*a*) the necessary degree of ketosis to prevent attacks; (*b*) the total caloric value; (*c*) the protein and vitamin content, and (*d*) digestibility and taste. A preliminary fast of a few days tends to insure the success of the ketogenic diet.

Serotherapy of Erysipelas.—Observations made by Platou et al. in 155 cases of erysipelas indicate that probably the best form of treatment available at the present time includes the intravenous, intraperitoneal or intramuscular administration of erysipelas antitoxin in adequate dosage, in addition to a proper (large) roentgen-ray irradiation of the involved area and the contiguous normal skin.

Bacteriology of Dried Milk Preparations.—The presence of a variety of living bacteria, including streptococci, in preparations of powdered milk indicates that the methods of manufacture do not destroy the bacteria in the milk and that the bacteria remain viable in the powder. The Dicks found that the preparation of powdered milk feedings without boiling or pasteurization, in order to avoid curdling, allows the bacteria in the powder to persist in a living form in the feeding.

Tuberculin Tests in Children.—Of a total of 208 children who were tested by DeSanctis and Reisman with the human and bovine types, seventy-five gave positive reactions to the tuberculin tests. In seventy-three of these, the human and bovine reactions were equal.

American J. Obstetrics and Gynecology, St. Louis

14: 697-868 (Dec.) 1927

*Ovary in Osteomalacia. J. R. Fraser, Montreal.—p. 697.
*Formation of Artificial Vagina by New Plastic Technic.—R. T. Frank and S. H. Geist, New York.—p. 712.
*"Safe Period" as Birth Control Measure. R. L. Dickinson, New York. p. 718.
*Blood Bilirubin in Ectopic Pregnancy. E. A. Horowitz and T. T. Kuttner, New York.—p. 731.
Backache from Obstetric and Gynecologic Standpoint. T. W. Adams, Portland, Ore.—p. 742.
Uterus Didelphys. C. G. Levinson and M. Wolfson, San Francisco. p. 748.
*Spinal Anesthesia in Obstetrics. S. A. Cosgrove, Jersey City, N. J. —p. 751.
Ureteral Stricture. C. Mazer, Philadelphia.—p. 761.
*Colporrhexis, or Rupture of Vault of Vagina. T. O. Gamble, Albany, N. Y.—p. 766.
Analysis of Maternal and Fetal Deaths in 291 Cesarean Sections. H. E. Miller, New Orleans.—p. 773.
Toxemias of Pregnancy in Relation to Chronic Cardiovascular and Renal Disease. J. Corwin and W. W. Herrick, New York.—p. 783.
Case of Human Cyclopia Resembling Anophthalmia. C. Bachman, Philadelphia.—p. 797.
Cortical Necrosis of Kidneys in Pregnancy. J. R. Manley and F. E. Kliman, Duluth, Minn.—p. 802.
*Evaluation of Methods in Obstetric Analgesia and Anesthesia: Gas-Oxygen. C. H. Davis, Milwaukee.—p. 806.
Dystocia Due to Fecal Impaction Resembling Pelvic Tumor. W. W. Rambo, St. Louis.—p. 812.

Ovary in Osteomalacia.—Fraser presents evidence in support of his belief that ovarian hyperplasia plays a prominent part in osteomalacia.

Formation of Artificial Vagina from Skin.—Frank and Geist describe a new method of formation of an artificial vagina from a tube flap of skin taken from the inner aspect of the thigh. It is devoid of danger and permits the using of healthy, well nourished, fully mobilized skin flaps, devoid of hair.

"Safe Period" as Birth Control Measure.—Dickinson stresses the point that there is no time in the month at which conception has not occurred in some women. The premenstrual week constitutes the relatively "safe period," or "low-risk period," when the average chance of pregnancy is less than one in ten. A "safe period" or sterile part of the cycle is present in every woman, but is a matter for individual tests. The height of fertility belongs to the week or ten days following menstruation. Fertility is relatively high during menstruation. For the four days that make up 14 per cent of the average menstrual cycle, conceptions from isolated coitus have amounted to 13 per cent. New evidence shows coincidence of maximum sex desire and maximum well being with minimum chance of conception in the premenstrual week; there is also a secondary wave of desire at the time of greatest fertility.

Blood Bilirubin in Ectopic Pregnancy.—According to Horowitz and Kuttner, ectopic pregnancy cannot be diagnosed by determinations of the bilirubin concentration of the peripheral blood.

Spinal Anesthesia in Obstetrics.—Cosgrove has employed spinal anesthesia in fifty-four cases of labor. All the patients except four were in active labor at the induction of anesthesia. He has found it a safe procedure. The single contraindication is hypotension. It is not fitted for first-stage analgesia by reason of its short duration. At the termination of the second stage by the vaginal route, it causes entire soft tissue relaxation; in selected cases this property may obviate lacerations or the necessity for episiotomy; it may be used here for any condition contraindicating general narcosis; it is not offered for routine use. In obstetric laparotomies it offers the same advantages that it does in general surgery, namely, complete anesthesia, thorough muscular and visceral relaxation, relatively slight bleeding, minimal postoperative discomfort, and a smooth postoperative course. In cases of pregnancy toxemia and eclampsia, when operative procedures of any sort are undertaken, spinal anesthesia is especially indicated. It is directly conservative of both maternal and fetal life.

Spontaneous Rupture of Vaginal Vault.—The case of spontaneous colporrhexis reported by Gamble emphasizes the importance of the pendulous abdomen as an etiologic factor.

Gas-Oxygen Anesthesia in Obstetrics.—Davis states that gas-oxygen is satisfactory for most operative deliveries except those requiring a considerable degree of relaxation such as version. For these, ether may be added to the mixture, but it is rarely needed when ethylene-oxygen is employed. Cesarean section may be performed with local anesthesia, combined anesthesia or with ethylene-oxygen. Caudal anesthesia or sacral nerve block is advised for patients with severe pulmonary cardiac and renal complications, with or without toxemia.

American J. Physical Anthropology, Philadelphia

10: 1-164 (Jan.-March) 1927

Anthropology and Medicine. Aleš Hrdlička, Washington, D. C.—p. 1.
*Discernment of Human Races by Blood: Russians from Jews. E. O. Manoiloff, Leningrad, Russia.—p. 11.
*Manoiloff's "Race" Reaction Applied to Determination of Paternity. A. T. Poliakowa, Leningrad, Russia.—p. 23.
Anthropologic and Physiologic Observations on Negroes of Natal and Zululand. V. Suk, Brno, Czechoslovakia.—p. 31.
Measurement of Men. C. B. Davenport, New York.—p. 65.
Relation of Orbital Plane to Position of Teeth. C. J. Connolly, Washington D. C.—p. 71.
Cephalic Index of American-Born Children of Three Foreign Groups. N. D. M. Hirsch, Worcester, Mass.—p. 79.
Dermatoglyphics in Jews. H. Cummins and C. Midlo, New Orleans.—p. 91.

Discernment of Human Races by Blood.—By means of a method of examination of blood groups which he has devised, Manoiloff asserts that he can distinguish Jewish blood from Russian (Great-Russian) in 91.7 per cent of 200 unknown samples tested. Among 2,000 persons of known race, he was able to distinguish Jewish blood from Russian blood in 88.6 per cent of the cases. He describes his method in detail.

Determination of Paternity by Manoiloff's Blood Reaction. Poliakowa has tested the Manoiloff race reaction in persons of forty-two pure marriages and fifty-seven mixed ones. Blood was taken from father, mother and child. In cases of pure marriages, the shade of the father's, mother's and the child's blood was the same, though the child's blood was always slightly paler than the parents'. In mixed marriages, the color of the child's blood inclines either to the father's or to the mother's, but is always slightly paler.

10: 165-321 (April-June) 1927

Evolution of Human Foot. J. P. McMurrich.—p. 165.
*Human Origin. D. J. Morton, New York.—p. 173.
Anthropology of American Negro. Aleš Hrdlička, Washington, D. C.—p. 205.
Growth of Chinese Children in Hawaii and in China. V. B. Appleton, Honolulu.—p. 237.
Sacral Pigment Spots: 700 Cases. N. P. Larsen and L. S. Godfrey, Honolulu.—p. 253.
Main Angle of Cranial Flexion (Nasion-Pituitary-Basion Angle). J. Cameron, Halifax, N. S.—p. 275.
Pituitary-Nasion-Basion Angle: New Cranial Angle. VI. J. Cameron, Halifax, N. S.—p. 280.
Id.: VII. J. Cameron, Halifax, N. S.—p. 286.
Id.: VIII. J. Cameron, Halifax, N. S.—p. 292.
Studies on Femur: III. Effects of Maceration and Drying in White and Negro. N. W. Ingalls, Cleveland.—p. 297.

Human Origin.—Morton presents evidence to show that comparative anatomy and prehuman fossil material afford various phases of testimony which indicate that the miocene proanthropoids represent the morphologic point from which the divergence of the anthropoid and human stems began. From the tarsioid origin of primate life, two evolutionary stages are depicted in an analysis of human body structures: (1) an arboreal stage, during which the ancestors of the modern apes and man were contained in a single phylectic stock, and (2) a terrestrial stage, which followed the separation of these two groups. It was during the latter stage that the distinctively physical characteristics of mankind were acquired. The human type of foot originated from a definitely anthropoid model. Man's erect posture is a modified inheritance from erect proanthropoid arboreal habits (brachiation). In his arm-body ratio, in dentition, in cranial characteristics and in brain development, the physical structures of man show a direct affinity with the halfway dryopithecine period in the evolutionary history of the great apes. From that point of bifurcation of the common ancestral stock, the apes continued to develop higher degrees of specialization for tree-living habits; while on the human side, adaptations for erect terrestrial bipedism modified, and later obscured, man's more primitive and underlying arboreal characters.

10: 323-504 (July-Sept.) 1927

*Blood: Species Reaction. E. O. Manoiloff, Leningrad, Russia.—p. 323.
First Seriatim Study of Human Growth. R. E. Scammon, Minneapolis.—p. 329.
Weight of Colored Infants: Growth During First Eighteen Months. C. T J. Dodge, Cleveland.—p. 337.
*Quadruped Progression in Human Child. Aleš Hrdlička, Washington, D. C.—p. 347.
Automatic Apparatus for Measurement of Cranial Capacity. V. J. Bushkovitch, Odessa, Russia.—p. 355.
Curvature of Bushman Calvarium. D. Slome, Cape Town.—p. 365.
Racial and Sexual Differences in Hair Weight. M. Bernstein and S. Robertson, Chicago.—p. 379.
*Supracondyloid Process in Feebleminded. L. D. Cady and B. F. Francis, St. Louis.—p. 387.
Studies on Femur: IV. Some Relations of Head and Condyles in White and Negro. N. W. Ingalls, Cleveland.—p. 393.

Blood Species Reaction.—Manoiloff has devised a species blood reaction by means of which he has distinguished cattle from horses by their blood serum in 100 per cent of the cases. This reaction is not biologic, but purely chemical, as it gives a correct answer with both fresh and old serums.

Quadruped Progression in Child.—Hrdlička reports five instances of children running naturally and spontaneously on all fours. These children belonged to the white, yellow-brown (American Indian), negro and Australian races. They were all healthy, physically normal infants of between 1 and 2 years of age. They ran on all fours easily and by choice, not by accident, through imitation, or by being so taught. Hardlička believes that this is purely an atavism.

Supracondyloid Process in Feebleminded.—Among 2,665 mental patients examined by Cady and Francis, thirty-nine had palpable supracondyloid processes (1.46 per cent). In five of these, the process was bilateral. The thirty-nine defectives bearing the palpable processes may be further divided into four classes: idiots, seven; imbeciles, eighteen; morons, fourteen, and epileptics, seven. There does not seem to be any special correlation in the incidence of the process with the grade of mental defect. There is no evidence of correlation of the supracondyloid process with feeblemindedness.

American J. Roentgenol. & Rad. Therapy, New York.

28: 401-500 (Nov.) 1927

Some Fundamental Aspects of Roentgen Rays and Protection of Roentgenographer. G. W. C. Kaye, Teddington, England.—p. 401.
Relation of Chemical, Colloidal and Biologic Effects of Roentgen Rays of Different Wave Lengths to Ionization Which They Produce in Air: II. Action of Roentgen Rays on Solutions of Ferrosulphate in Water. H. Fricke and S. Morse, Cleveland.—p. 426.
Chemical Action of Roentgen Rays on Dilute Ferrosulphate Solutions as Measure of Dose. H. Fricke and S. Morse, Cleveland.—p. 430.
Use of Supersoft Roentgen Rays (2 A) in Dermatology. J. J. Eller, New York.—p. 433.
*Rickets Occurring Late in Chronic Interstitial Nephritis. R. G. Karshner, Los Angeles.—p. 442.
*Gastric Carcinoma: Rare Complication: Ulceration Forming Natural Gastro-Enterostomy. H. Olin, Chicago.—p. 451.
Roentgenography in Prognosis of Pulmonary Tuberculosis. A. G. Schnack, Honolulu.—p. 453.
Report Analyzing Results of Questionnaire Sent Out to Radiologists, Under Direction of Sex Committee of National Research Council. P. M. Hickey and E. W. Hall, Ann Arbor, Mich.—p. 458.

Rickets Complicating Chronic Interstitial Nephritis.—Karshner reports the case of a child suffering from chronic interstitial nephritis who exhibited clinically, pathologically and roentgenologically the characteristics of active rickets, with onset at infancy and persistence until her death at 9 years, in spite of intensive antirachitic measures. In five similar cases in which blood phosphorus and calcium determinations have been carried out, the condition was a low calcium rickets. Karshner urges that in all cases of stunting of growth or late rickets there should be careful examination for nephritis, especially if operative correction of genu valgum, or other deformity, is contemplated. Conversely, since chronic interstitial nephritis is a rarity in infancy and childhood, all such cases should be subjected to roentgen-ray examination of the bones for indications of rickets.

Natural Gastro-Enterostomy in Gastric Carcinoma.—A woman, aged 70, had an extensive carcinoma of the stomach. It ulcerated through into the jejunum, forming a natural gastro-enterostomy. The ulcerative anastomosis healed sufficiently to form a functioning stoma. According to Olin, the striking features of this gastric carcinoma were: (1) the apparent comfort of the patient, and (2) the absence of a history of vomiting of blood.

American J. Syphilis, St. Louis

11: 517-658 (Oct.) 1927

Chemical Constitution and Therapeutic Effect of Some Newer Antisyphilitic Remedies. G. W. Raiziss, Philadelphia.—p. 517.
*Experience with 2,000 Intramuscular Injections of Neoarsphenamine in Neurosyphilis. A. Gordon, Philadelphia.—p. 525.
*Syphilis Resistant to Bismuth. I. C. Sutton, Hollywood, Calif.—p. 530.

*Simulation of Decerebrate Rigidity in Two Paretics. C. E. Kiely, Cincinnati.—p. 532.
Case of Congenital Syphilis. J. R. McCord, Atlanta, Ga.—p. 538.
Treponematosis as Public Health Factor. C. S. Butler and E. Peterson, Washington, D. C.—p. 539.
*Syphilitic Meningitis in Infants and Young Children. J. W. Amesse and W. W. Barber, Denver.—p. 544.
Treatment of Neurosyphilis. J. L. McCartney, Washington, D. C.—p. 550.
Treatment of Syphilis. A. Ravogli, Cincinnati.—p. 576.
Id.: A. L. Anderson, Springfield, Mo.—p. 588.
Syphilis. W. Moser, New York.—p. 590.
Biochemistry of Wassermann Reaction. A. J. Hinkleman, Oklahoma City.—p. 594.
Rapid Simple Method for Simultaneous Titration of Amboceptor and Complement. J. H. Clark, Philadelphia.—p. 609.
*Analysis of Wassermann, Kahn and Meinicke Tests. F. R. Schmidt and R. C. Zickmann, Chicago.—p. 614.

Neoarsphenamine in Neurosyphilis.—Gordon states that while massive doses of arsenical preparations given by the intravenous route for the sterilization of the organism may be indicated in the initial stages of syphilitic infection, or as a preventive treatment of syphilis before the spirochetes made their diffuse inroad into the economy, so that one may be justified to run the risk of complications, such a therapeutic conduct is not at all indicated in the secondary or tertiary periods of the disease when neurosyphilis is in evidence. Here the changes for a definite sterilization are very small, as the syphilitic parasites are already disseminated throughout the entire body. These risks are too great to warrant the employing of severe methods for slight results, especially when a much safer procedure is at hand which, if correctly and minutely carried out, leads to identical therapeutic consequences.

Syphilis Resistant to Bismuth.—Sutton's experience with bismuth in this case leads him to conclude that it does not seem advisable to place too much reliance on any one drug but rather to stick to the combined method of the arsenic-mercury and arsenic-bismuth mode of therapy.

Simulation of Decerebrate Rigidity in Patients with General Paralysis.—Two cases are reported by Kiely of sustained generalized tonic spasm with hyperthermia in patients with general paralysis, one suggestive of the Magnus-de Kleijn phenomena. The lesion is presumed to be thrombotic and localized to the midbrain.

Syphilitic Meningitis in Infants.—Amesse and Barber cite four cases to show that meningitis of syphilitic origin may occur in strong, well nourished babies in whom no stigmas of syphilis can be found. The prognosis is universally bad.

Analysis of Tests for Syphilis.—In five tests made by Schmidt and Zickmann on the blood of patients with clinically proved syphilis, both before and after treatment, the Wassermann reaction was positive, while both the precipitation tests were negative. However, in three other cases after treatment, the Wassermann reaction was negative, while both the Kahn and Meinicke reactions were positive. In one patient with a tumor of the testis which was diagnosed as a mixed-cell sarcoma by the pathologist, the Wassermann and Meinicke reactions were negative, while two different Kahn tests were positive. The Kahn test failed to show positivity in six clinically proved cases of syphilis, whereas the Wassermann and Meinicke tests were positive. In three cases of treated syphilis, the Wassermann and Kahn tests were negative, while the Meinicke reaction was positive.

Annals of Internal Medicine, Ann Arbor, Mich.

1: 123-201 (Sept.) 1927

*Rich Liver Diet in Treatment of Anemias. T. P. Murdock, Meriden, Conn.—p. 123.
Anemia of Pregnancy. V. C. Rowland, Cleveland.—p. 129.
Hemolytic Anemia of Pregnancy: Cases. T. P. Murdock, Meriden, Conn.—p. 133.
Early Diagnosis of Gastric Carcinoma. J. M. Anders, Philadelphia.—p. 137.
*Diagnosis of Operable Carcinoma of Stomach. C. S. McVicar and J. Daly, Rochester, Minn.—p. 145.
*Management of Essential Hypertension. N. Lukin, New York.—p. 161.
Late Spring or Summer Hay-Fever in District of Columbia and Vicinity. G. T. Brown, Washington, D. C.—p. 169.
Quest of Holy Prepuce. W. R. Chynoweth, Battle Creek, Mich.—p. 179.

Rich Liver Diet in Treatment of Anemias.—Three cases are reported by Murdock. Hemolytic anemia is a specific anemia of pregnancy with the blood picture resembling the blood picture of pernicious anemia. The condition is likely to recur with succeeding pregnancies. High nucleoprotein diets should be given a thorough trial in the management of this disease.

Diagnosis of Operable Carcinoma of Stomach.—McVicar and Daly analyze the relative importance of various criteria in the diagnosis of 2,087 cases of carcinoma of the stomach. Recurrent cases were excluded. Operation was not performed in 928 of these cases. In rejecting cases, the clinician was influenced by external evidence of metastasis which precluded the removal of all malignant tissue, rigid fixation of an epigastric tumor, and in a few instances debility of the patient, which rendered the immediate risk of operation prohibitive. In most cases, the roentgenologist was responsible for the rejection. By combined fluoroscopic and palpatory examination he demonstrated that the lesion was inaccessible, or that the extent of the infiltration made resection impossible. In a considerable number of cases, the patient refused operation. Metastasis occurred in 38 per cent of the 928 cases not subjected to operation. In an attempt to learn what might reasonably be assumed to be the earliest symptoms or signs of carcinoma, a review was made of the histories of a group of patients with resectable lesions in whom the total duration of symptoms was less than two months. These symptoms were compared with the first symptoms and signs in cases dating back two years. There was not any appreciable difference in the two groups. In a few cases, an epigastric tumor was the first sign noticed. In most cases pain was the premonitory symptom. Vomiting, hematemesis and loss of strength and weight followed in the order mentioned. Cases characterized by an insidious onset of ill health without signs or symptoms referable to the stomach constitute a small but important group which should be differentiated from chronic nephritis and the malignant blood dyscrasias. In the authors' opinion, roentgenology holds first place in the diagnosis of resectable carcinoma of the stomach. The roentgenologist's interpretation of this evidence must often be supplemented, or amended, by the clinician. The responsibility for early diagnosis and advice as to appropriate treatment must be shared by the roentgenologist, physician and surgeon.

Management of Essential Hypertension.—A definite regimen for the management of essential hypertension is described by Lukin, based mainly on a high intake of animal protein and fruits, ingestion of considerable amounts of coffee, avoidance of minor decompensations by the elimination of hot baths with sweating, and the substitution of showers. Personal experience with this method is related by a physician who is himself a victim of hypertension. Laboratory and empiric observations are discussed and directed to defend this method.

Annals of Medical History, New York

9: 205-314 (Fall) 1927

Centenary of Lister (1827-1927): Tale of Sepsis and Antisepsis. A. P. C. Ashhurst, Philadelphia.—p. 205.
Dr. Joseph Buchanan. A. H. Barkley, Lexington, Ky.—p. 222.
Medical Aspect of Robert Hooke. W. S. Middleton, Madison, Wis.—p. 227.
Influence of Three Monros on Practice of Medicine and Surgery. S. W. Simon, Chicago.—p. 244.
Inaugural Medical Debate on Elephantiasis or Lepra Arabum, by Benjamin Niesius, University of Strasbourg, July, 1673. O. E. Denney, Carville, La.—p. 267.
Paleopathology: XXI. Injuries to Head Among PreColumbian Peruvians. R. L. Moodie, Chicago.—p. 277.

9: 315-424 (Winter) 1927

Pygmies, Dwarfs and Hunchbacks in Ancient Egypt. W. R. Dawson, London.—p. 315.
Cult of Asklepios. E. M. Bick, New York.—p. 327.
D. Richard Bright: Ophthalmologist's Appreciation. B. Chance, Philadelphia.—p. 332.
Kidney Disease as Described by Richard Bright in Light of Knowledge of Century Later. H. A. Christian, Boston.—p. 337.
Around Generation in Timaeus. J. Wright, Pleasantville, N. Y.—p. 347.
Pott's Disease in Early Historic Peru. R. L. Moodie, Santa Monica, Calif.—p. 356.
Mastoiditis in PreColumbian Peru. R. L. Moodie, Santa Monica, Calif.—p. 357.
"Middlemarch" and Physician ("Middlemarch" and Sir William Osler). H. A. Derow, Boston.—p. 358.
Patristic Medicine. S. D'Irsay, New Haven, Conn.—p. 364.

Consumption (Tuberculosis) in Classic Antiquity. B. Meinecke, Ann Arbor, Mich.—p. 379.
Treatment of Wounds of Abdomen in Ancient Times. J. G. DeLint, The Hague, Holland.—p. 403.
Representations in Utrecht Manuscript of Guy de Chauliac of Instruments for Reduction of Uvula. J. G. DeLint, The Hague, Holland. —p. 408.

Archives of Internal Medicine, Chicago

40: 743-912 (Dec.) 1927

*Experiments on Water and Salt Diuresis. D. M. Rioch, Rochester, N. Y. —p. 743.
*Changes in Eyeground in Vascular Diseases and in Related Conditions: Retinal Arteriosclerosis. H. O. Altnow, Minneapolis.—p. 757.
*Atypical Sprue. A. C. Reed, San Francisco, and J. E. Ash, Washington, D. C.—p. 786.
*Serum Bilirubin in Health and in Disease. L. Schiff, Cincinnati.—p. 800.
Dietary Factors That Influence Dextrose Tolerance Test. J. S. Sweeney, Dallas, Texas.—p. 818.
Chemical Studies in Tuberculosis: I. Plasma Proteins, Cholesterol and Corpuscle Volume. L. Eichelberger and K. L. McCluskey, Chicago. —p. 831.
*Postural Treatment of Lung Suppuration. M. J. Mandelbaum, New York.—p. 840.
*Ephedrine Therapy: Sixty-Two Cases. T. L. Althausen and I. C. Schumacher, San Francisco.—p. 851.
Myotic Gastritis. H. A. Singer, Chicago.—p. 873.
*Possible Increase of Guanidine in Blood of Certain Persons with Hypertension. R. H. Major and C. J. Weber, Kansas City, Kan.—p. 891.
Experimental Obstructive Jaundice: I. Growth Factor in Defective Calcification. W. C. Buchbinder and R. Kern, Chicago.—p. 900.

Experiments on Water and Salt Diuresis.—The results of the experiments described by Rioch are in accord with the theory that the osmotic pressure of the plasma is the stimulus of water and salt diuresis.

Incidence of Retinal Arteriosclerosis.—In forty-seven diabetic patients of all ages (excluding children under 12 years), with and without hypertension, the incidence of definite retinal arteriosclerosis was 36.1 per cent in the latter and 81.8 per cent in the former. In a small series of cases of acute and subacute nephritis, retinitis was conspicuous by its absence. The two patients with retinitis both had hypertension. Retinitis occurs with greater frequency in chronic nephritis than in vascular hypertension. A study of the changes in the eyegrounds in fifty-six patients with and without hypertension, in whom chronic myocarditis was either the primary or the important secondary diagnosis, revealed the presence of definite retinal arteriosclerosis in 91.2 per cent of the former and in 68.2 per cent of the latter. This observation, Altnow believes, indicates that previous hypertension may play an important part in the etiology of chronic myocarditis, with and without hypertension. In chronic valvular disease that had developed on a rheumatic basis, retinal arteriosclerosis was absent in two thirds of the cases, and when definite retinal arteriosclerosis was present, it occurred in association with elevation of the blood pressure and in patients who had reached an age when degenerative changes in the vascular system might become manifest.

Atypical Sprue.—Reed and Ash report eight cases presenting gastro-intestinal disturbances like those of sprue—an anemia approaching the so-called pernicious primary type and nervous phenomena characteristic of subacute myelinic degeneration of the spinal cord and of the peripheral nerves. This variety of atypical sprue occurs chiefly in white men resident for varying periods in tropical or subtropical climates. It is progressive, and, although remissions occur, the course usually proceeds to a fatal termination.

Studies on Serum Bilirubin.—The original observation of Hijmans van den Bergh that increase of serum bilirubin during obstructive jaundice gives a "direct" reaction with Ehrlich's diazo reagent, and that increase in hemolytic types of jaundice gives only an indirect reaction, has been confirmed by Schiff.

Postural Treatment of Lung Suppuration.—Mandelbaum describes a new postural frame, recommends the jack-knife position and abdominodiaphragmatic pulmonary compression, and reviews the literature.

Use of Ephedrine in Asthma and Hay-Fever.—Thirty-nine patients with asthma and twelve patients with hay-fever were treated by Althausen and Schumacher with ephedrine, which served to control the attacks and, when used constantly, to prevent them, in many instances. Ephedrine therapy gave complete relief in 56 per cent and partial relief in an additional 24 per cent of cases. In 8 per cent of the cases, failures were due to absence of relief, and in 12 per cent of the cases to marked untoward symptoms. Oral administration gave relief in from five to thirty minutes, and hypodermic administration acted more promptly. Compared to epinephrine, ephedrine acted more slowly and less completely; the action, however, continued much longer, and in most cases the disagreeable by-effects of epinephrine were avoided. Combination of these two drugs often produced marked untoward symptoms. Undesirable effects from ephedrine medication in the form of nausea, vomiting, nervousness, insomnia and palpitation were encountered in 30 per cent of the cases, and in 12 per cent these symptoms were so severe that the administration of the drug had to be discontinued. Some degree of tolerance to ephedrine was obtained in at least 15 per cent of the cases. In one case of toxic erythema, spectacular recovery was obtained with ephedrine. In seven cases of urticaria, the benefit from ephedrine therapy was doubtful in two and absent in five. Three patients with angioneurotic edema failed to improve after the administration of ephedrine.

Blood Guanidine in Hypertension.—Major and Weber report further on their studies, and describe an improvement of the method formerly used. The method differs from that previously described in that the guanidine bases are absorbed by blood charcoal from a filtrate made slightly alkaline, and subsequently are released from the charcoal by means of acidified alcohol. They found increased amounts in fifty observations on patients suffering from arterial hypertension, including six cases of frank nephritis.

Archives of Neurology and Psychiatry, Chicago

18: 867-1064 (Dec.) 1927

*Pathologic Changes in Huntington's Chorea. C. B. Dunlap, New York. —p. 867.
*Encephalitis Periaxialis Diffusa (Schilder). G. Schaltenbrand, Boston. —p. 944.
Pathology of Amyotonia Congenita: Relation to Infantile Progressive Muscular Atrophy. R. R. Grinker, Chicago.—p. 982.
*Stuttering: II. Photographic Studies of Voice. L. E. Travis, Iowa City.—p. 998.
Fantasy of Not Belonging to One's Family. P. R. Lehrman, New York. —p. 1015.

Pathologic Changes in Corpus Striatum in Huntington's Chorea.—The anatomic changes found in the brains in seventeen positive cases of Huntington's chorea are reported on by Dunlap. Twelve questionable cases of Huntington's chorea were also included in this study, and thirty or more control cases have been used in connection with the choreas. The study has been especially focused on the corpus striatum; consequently, the gross and histologic characteristics of this organ are the topics chiefly discussed. Dunlap believes that this material justifies the assertion that in pure and well developed Huntington's chorea there are constant lesions of definite type in the corpus striatum and in the cerebral cortex and marrow, and these lesions, if found in a brain unaccompanied by clinical history, are characteristic enough to make a postmortem diagnosis of Huntington's chorea at least probable if not certain, for the peculiar combination of cortical changes and basal nuclear lesions apparently is not reproduced in any other disease.

Encephalitis Periaxialis Diffusa.—Schaltenbrand reports the case of a schoolgirl, aged 14, who was admitted because of suspected appendicitis. During the first examination she was apathetic and had a right-sided facial weakness and optic neuritis. During her sojourn in the hospital, she gradually developed choked disk and signs of extensive bilateral lesions of the brain, so that the probable diagnosis of encephalitis periaxialis diffusa was made. She died after an illness of three months' duration, in a state indicating practically complete disappearance of all cortical functions. The postmortem examination of the body did not reveal anything of importance pathologically. The brain, however, showed widespread softening and disintegration of the white matter of both hemispheres, the gray matter in general being spared. The process involved the corpus callosum, and extended downward as far as the midbrain and the chiasm.

Records of Voice in Stuttering.—Travis made photographic records of the voices of twenty stutterers in unemotional, propositional speech and here discusses his results.

Boston Medical and Surgical Journal

197: 1117-1160 (Dec. 15) 1927

Therapeutic Uses of Carbon Dioxide in Medicine and Surgery. J. C. White, Strasbourg, and L. M. Hurxthal, Boston.—p. 1117.
Action of Iodides on Nitrogen Metabolism. G. P. Grabfield, Boston.—p. 1121.
Orthopedic Care of Several Different Forms of Chronic Arthritis. P. N. Jepson, Boston.—p. 1124.
Rupture of Uterus During Pregnancy. J. G. Hanson, Northampton, Mass.—p. 1127.

197: 1161-1206 (Dec. 22) 1927

Field Respiration Apparatus for Survey of Racial Metabolism. F. G. Benedict, Boston.—p. 1161.
Early Diagnosis and Nonparalytic Anterior Poliomyelitis. E. H. Luther, Boston.—p. 1175.
*Multiple Hereditary Telangiectasis. J. Balph, Pittsburgh.—p. 1177.

Multiple Hereditary Telangiectasia.—Balph has seen five cases of multiple hereditary telangiectasis in members of one family. Two other relatives (mother and maternal uncle) of one patient were also affected but were not seen. A survey of the literature shows that thirty-five families have been recorded up to February, 1926, this making the thirty-sixth family.

California and Western Medicine, San Francisco

27: 737-880 (Dec.) 1927

Pelvic Floor: Anatomy and Mechanics. A. W. Meyer, Palo Alto.—p. 769.
*Extra-Articular Fusion of Tuberculous Hip Joint. J. C. Wilson, Los Angeles.—p. 774.
Cholecystography. R. G. Van Nuys, Oakland.—p. 777.
*Rheumatic Heart Disease: Prognosis. A. H. Washburn, San Francisco.—p. 781.
*Mechanical Diagnosis in Pulmonary Tuberculosis. J. R. Williams, San Jose.—p. 786.
Radiation Therapy in Hyperthyroidism. A. Soiland, W. E. Costolow and O. N. Meland, Los Angeles.—p. 789.
*Posterior Pulmonary Abscess. L. F. Morrison, San Francisco.—p. 792.
Arsenical Optical Neuritis: Case Reports. G. N. Hosford, San Francisco.—p. 797.
Lure of Medical History: Ambroise Paré. J. Oliver, San Francisco.—p. 800.
*Diabetes Mellitus with Myelogenous Leukemia and Miliary Tuberculosis. H. Rapaport, Los Angeles.—p. 802.

Iliofemeroplasty.—Iliofemeroplasty is the term applied by Wilson to the procedure he describes. Through the Smith-Peterson approach, which consists of an incision along the iliac crest and a subperiosteal reflection of the gluteus medius and minimus outward, the capsule of the hip joint is exposed. The capsule is incised parallel with the neck of the femur and freed from its attachment to the superior margin of the acetabulum. The great trochanter is then exposed subperiosteally and split away from the shaft with a broad, flat osteotome. With a thin osteotome, a fan-shaped flap is then cut from the lateral surface of the ilium. The greatest width of the flap is at the iliac crest, and when the osteotome is introduced under the outer cortex, it may readily be passed downward to just above the margin of the acetabulum. In this way a large plate of bone may be bent downward and slipped into the fissure in the femur. The periosteum of the ilium is then sutured, and the ground is laid for a firm fusion by the formation of a bony block which corresponds roughly in shape to the projected line of the femur, the ilium, and the femoral neck.

Convalescent Homes for Cardiac Children.—Washburn pleads for the widespread establishment of convalescent homes where cardiac children may receive proper care and where invaluable observations can be made on large groups of such children during the period when they need rest and quiet.

Mechanical Diagnosis in Pulmonary Tuberculosis.—Admitting that mechanical means as aids in making a diagnosis are useful to the clinician, and that they should always supplement clinical examinations when practicable, Williams believes that they are prone to more errors than the workers with them are willing to admit. He insists that, when mechanical means fail to tally with the history, clinical symptoms and physical observations, it is safer to rely on the latter than on the former. He is convinced that many physicians are relying on mechanical means as employed in some laboratories, rather than on the natural faculties given them by nature, and by such reliance are failing to develop their natural faculties to the efficiency demanded for excellent clinical work. Never has the art of physical examination and logical deduction suffered so much as since the introduction of the microscope, the roentgen ray and other alleged instruments of precision.

Abscess of Lung.—During a fourteen-year period, 241 patients with lung abscess have been cared for in two hospitals whose records were reviewed by Morrison; of these 241 patients, forty had a definite history of onset of symptoms following sufficiently near to some operative procedure to lead one to believe that the abscess resulted from the operation or procedures intimately associated with the operation. In twenty cases, the operation done was a tonsillectomy. In twenty-six of the forty cases, only the right lung showed involvement. Nine cases showed involvement of only the left lung and five cases presented multiple abscess formation. Regardless of the treatment employed, there is no marked difference between the mortality rate in posttonsillectomy lung abscesses and in those which followed some other type of operation. According to the latest follow-up reports, ten patients with the former and eight with the latter type of abscess are still living. Treatment was, with a single exception, medical, mainly expectant and supportive, for the first three months. In general, surgery had been delayed until several months had passed and then employed only as a last resort.

Diabetes Mellitus Complicated by Leukemia and Tuberculosis.—Each of the three cases reviewed by Rapaport was one of diabetes mellitus with myelogenous leukemia, but the diabetes preceded the leukemia. In Rapaport's own case the leukemia did not appear until more than three months after the patient was admitted to the hospital. Two additional cases of diabetes mellitus with myelogenous leukemia reported in the literature were complicated by miliary tuberculosis.

Endocrinology, Los Angeles

11: 377-496 (Sept.-Oct.) 1927

*Hemochromatosis. T. L. Althausen and W. J. Kerr, San Francisco.—p. 377.
Thymic Death. E. Bonilla, Madrid.—p. 423.
Field of Usefulness of Iodine in Goiter. A. F. Jennings and S. W. Wallace, Detroit.—p. 431.
*Association of Urologic Lesions with Hypothyroidism. H. G. Beck, Baltimore.—p. 438.
*Headache in Relationship to Ovarian Dysfunction. E. C. Fishbaugh, Los Angeles.—p. 445.
Orbital Method for Extirpation of Hypophysis in Pigeon. D. Ogata and H. Nishimura, Nagasaki, Japan.—p. 457.

Hemochromatosis.—Three cases of hemochromatosis are reported by Althausen and Kerr; one was a simple hemochromatosis without diabetes, one, a hemochromatosis without skin pigmentation, and one, a classic case. The three main features of the disease, pigmentation of the skin, diabetes and cirrhosis of the liver, are discussed, as well as two complications of hemochromatosis—primary carcinoma of the liver and sexual regression. The results of insulin therapy are reported, showing that the diabetes of hemochromatosis differs from simple diabetes mellitus in three respects: marked instability of the blood sugar level, unusual character of insulin reactions, and tendency to acidosis. Two explanations are offered to account for these differences, namely, impairment of the power on the part of the liver to regulate carbohydrate metabolism, and diminished absorptive capacity of the gastro-intestinal mucosa.

Thyroid Deficiency and Urologic Lesions.—An analysis made by Beck of 100 consecutive cases suggests that there is a definite increase in the incidence of urologic diseases developing as a sequence of thyroid deficiency. He suggests that a careful investigation should be made in regard to the genito-urinary function, and that the urine should be carefully studied for pathologic elements. The facts elicited should lead one to stress their significance and make an effort to diagnose the milder forms of hypothyroidism early,

administering thyroid in order to prevent these complications. One should not lose sight of the fact that heredofamilial myxedema may possibly be prevented by the administration of thyroid to the expectant mother during the period of gestation.

Ovarian Dysfunction Causes Headache.—Fishbaugh reports fifteen cases of menstrual headache in which relief was obtained by treatment of ovarian dysfunction . The headache itself is not characteristic, nor does it differ from headaches due to other causes. Two cases are reported of patients who were relieved of their headaches by the production of an artificial menopause.

Journal of Infectious Diseases, Chicago

41: 405-484 (Dec.) 1927

Reaction of Dog to Continuous Intravenous Injection of B. Coli. W. F. Petersen, E. F. Müller and W. Boikan, Chicago.—p. 405.
Immunologic Relations of Type 4 Pneumococci Obtained During Epidemic. G. H. Robinson, Pittsburgh.—p. 417.
*Streptococci as Cause of Spontaneous Abortion. A. F. Reith, Milwaukee. —p. 423.
*Duration of Immunity to B. Welchii Toxin in Rabbits. G. B. Reed and M. Spence, Kingston, Ont.—p. 428.
Action of Hemotoxins on Oxygenated and Reduced Blood: I. B. Welchii Toxin. G. B. Reed, J. H. Orr and W. A. Campbell, Kingston, Ont. —p. 434.
*Epizootic of Hemorrhagic Septicemia in Guinea-Pigs. G. B. Reed and G. H. Ettinger, Kingston, Ont.—p. 439.
*Effect of Cl. Sporogenes on Toxin Production by Cl. Botulinum. E. W. Sommer and K. Glunz, San Francisco.—p. 442.
*Production of Local Renal Lesions in Rabbits by Intravenous Injections of Certain Strains of B. Coli. H. F. Helmholz, Rochester, Minn.—p. 448.
*Nonspecific Wassermann and Agglutinin Reactions with Serums from Patients with Febrile Diseases. M. Corrigan, Chicago.—p. 457.
Biology of B. Fusiformis. J. S. Pratt, New York.—p. 461.
Proteases and Antiproteases of Pleural Exudates. C. Weiss, San Juan, P. R.—p. 467.
Is Antigenic Action of Hemoglobin Due to Globin? L. Hektoen and K. Schulhof, Chicago.—p. 476.

Streptococci as Cause of Spontaneous Abortion.—Pleomorphic, anaerobic, green-producing or faintly hemolytic streptococci from the tonsils and placenta of a woman who had had repeated spontaneous abortions produced abortion in four pregnant rabbits and hemorrhage in the uterus in eight out of ten nonpregnant rabbits after intravenous injection. In thirteen rabbits given injections with a throat culture from the same woman ten months after tonsillectomy, and with tonsil and prostate cultures from her husband, no lesions in the uterus were seen. Reith asserts that these results corroborate the theory that foci of infection may harbor streptococci which possess properties that may give rise to spontaneous abortion.

Immunity to B. Welchii Toxin.—Reed and Spence have shown that the injection of *B. welchii* toxin into rabbits in doses sufficient to produce a definite anemia is followed, after one to two doses, by the establishment of an immunity. The immunity remains unimpaired for more than seven weeks but shows a conspicuous decrease after from four to seven months.

Epizootic of Hemorrhagic Septicemia.—An epizootic is described by Reed and Ettinger involving the death of 60 per cent of a colony of guinea-pigs. An organism resembling *Pasteurella cuniculicida* was isolated from animals in the epidemic which, when injected into unexposed guinea-pigs, reproduced the disease.

Effect of Clostridium Sporogenes on Toxin Production by Clostridium Botulinum.—Spore suspensions of *Clostridium botulinum* and *Clostridium sporogenes* inoculated in varying relative amounts into meat, spinach and asparagus mediums which were incubated for ten days and tested for the presence of toxin revealed botulinum toxin in all the meat cultures in which *Clostridium botulinum* was present, irrespective of the number of sporogenes. Sommer and Glunz found that the inoculation of an equal or greater number of *Clostridium botulinum* organisms with sporogenes was usually necessary for toxin production in spinach. In asparagus, a poorer toxin medium, a more deleterious influence of sporogenes on botulinum toxin has been noted. In meat, spinach and asparagus mediums, increasing numbers of sporogenes gradually diminished the strength of the toxin.

Colon Bacillus Causes Renal Lesions.—Helmholz asserts that this is the first report of the specific localization of the colon bacillus.

Nonspecific Wassermann and Agglutinin Reactions.—With serums from 100 patients with febrile diseases, two strongly positive Wassermann reactions were unaccountably obtained by Corrigan in cases of pneumonia in which there was no history of syphilis; in one of these the Wassermann reaction became negative after the crisis. One strongly positive reaction was observed in a nonsyphilitic case of endocarditis, and a weakly positive reaction (2 plus with cholesterol antigen) occurred in a case of epilepsy. A 1:40 agglutination and a 2 plus fixation with *B. typhosus* occurred in two cases of pneumonia in which there was no history of typhoid immunity. The serum of two patients with typhus agglutinated *B. typhosus*. The serum of a patient who proved not to have typhus agglutinated *B. proteus* X in a dilution of 1:640.

Journal of Laboratory & Clin. Medicine, St. Louis

13: 201-302 (Dec.) 1927

*Effects of Intracutaneous Injection of Epinephrine in Children. J. D. Pilcher, Cleveland.—p. 201.
Effect of Drugs on Number of Circulating White Blood Cells. W. J. R. Camp, Chicago.—p. 206.
Criticism of Lipase "Picture" Method. H. Beckman, Milwaukee.—p. 214.
*Household Objects as Causes of Hypersensitiveness. S. M. Feinberg, Chicago.—p. 220.
Preparation of Neutral Acriflavine Solutions for Intravenous Injection. V. Burke and E. A. Rodier, Pullman, Wash.—p. 231.
Effect of Intravenous Injections of Neutral Acriflavine on Bacteriostatic Action of Blood. V. Burke and E. A. Rodier, Pullman, Wash.—p. 237.
Erythrocyte Diameters in New-Born. H. Silvette, Richmond, Va.—p. 245.
Saccharomyces Mali Duclauxi Isolated from Throat Culture. R. E. Hoffstadt, Seattle.—p. 249.
Evaluation of Brigs' Method for Colorimetric Determination of Phosphorus. H. B. Bennett, New Haven, Conn.—p. 251.
New and Improved Injection Apparatus. L. Gross, New York.—p. 257.
Operating Board for Rabbits. E. Weiss, Chicago.—p. 262.
Basal Metabolism Standards. W. H. Stoner, Philadelphia.—p. 265.
Wassermann Reaction in Cerebrospinal Fluids Containing Blood. A. G. Foord and M. Bauckus, Buffalo, N. Y.—p. 270.
Frozen Sections: Value as Routine Procedure. R. A. Keilty, Washington, D. C.—p. 273.
Modification of Orskov Single Cell Culture Technic. E. W. Stearn and A. E. Stearn, Columbia, Mo.—p. 276.
Simple Apparatus for Repeated Blood Pressure Determinations in Rabbits. T. L. Squier, Milwaukee.—p. 279.
Local Anesthesia: VII. Toxicity of Some Derivatives of Para-Amino Benzoic Acid. J. Sacks, Chicago.—p. 281.
Practical Technic in Preparation of Smears for Examination of Tubercle Bacilli. L. T. Black, Denver.—p. 287.

Effects of Intracutaneous Injections of Epinephrine.—According to Pilcher, the intracutaneous injection of epinephrine in human subjects is usually followed promptly by the systemic effects of the drug. The action is much more pronounced than with the same quantity administered subcutaneously, and probably somewhat greater than by the intramuscular administration.

Household Objects as Causes of Hypersensitiveness.—Attention is called by Feinberg to the importance of the relation between allergic disease and household objects. Data are presented showing the many, and generally unsuspected, finished products that are made from substances which are definitely known to cause hypersensitiveness. Attention is directed to the many unsuspected materials and the variation in the kinds and brands of well known materials with which we may come in daily contact and which may possibly play a significant rôle in some cases of allergy.

Kentucky Medical Journal, Bowling Green

25: 603-662 (Nov.) 1927

Doctor: Yesterday, Today and Tomorrow. R. J. Estill, Lexington.—p. 605.
Epochs in Surgery. F. T. Fort, Louisville.—p. 607.
Lipiodol in Diagnosis of Pulmonary Lesions. O. O. Miller, Valley Station.—p. 613.
Problem of Malignancy. E. S. Allen, Louisville.—p. 615.
Summer Diarrhea Problems. P. F. Barbour, Louisville.—p. 621.
Heart Disease. E. F. Horine, Louisville.—p. 626.
Digestive Disturbances in Infants. T. F. Marshall, Paducah.—p. 632.
Acute Lymphatic Leukemia: Case. G. C. Hall, Louisville.—p. 635.
Pancreatitis. M. Casper, Louisville.—p. 637.
Abdominal Pain. T. J. Crice, Louisville.—p. 639.
*Treatment for Fractures of Femoral Neck. G. A. Hendon, Louisville. —p. 642.
Lactic Acid Milk. A. A. Shapero, Louisville.—p. 647.

Treatment of Fractures of Neck of Femur.—Hendon believes that the propensity of opened fractures toward suppuration is not so much due to the character and nature of the injury as it is to the embarrassment of local nutrition which is caused by splints or other immobilizing apparatus. Therefore he "nails" the fragments together with a beef bone pin, 4 inches long, which is driven in through the neck until it engages in the cancellous structure of the head. No weights, splints, or other immobilizing devices are employed. The wound is dressed, and the patient put to bed and confined until the wounds in the soft tissues have become healed, which requires about three weeks. Then he is allowed to get in a wheel chair for another week, and allowed to use crutches as soon as he can be taught to use them.

Maine Medical Association Journal, Portland

18: 157-177 (Sept.) 1927

Treatment of Diabetes and Hypertension. E. R. Blaisdell, Portland.—p. 157.
Treatment of Metabolic Disorders. F. M. Allen, Morristown, N. J.—p. 165.
Significance of Early Retinal Changes in Arteriosclerosis. H. F. Hill, Waterville.—p. 174.

Michigan State M. Society Journal, Grand Rapids

26: 703-756 (Dec.) 1927

Acute Traumatic Injuries of Abdomen. L. Dretzka and B. F. Freeman, Detroit.—p. 703.
Evaluation of Intelligence Tests. L. E. Duval, Ionia.—p. 711.
Dacryocystitis. W. Fowler, Detroit.—p. 716.
*Tuberculous Laryngitis: Treatment with Chaulmoogra Oil. C. F. Snapp, Grand Rapids.—p. 719.
Preconvulsive Stage of Epilepsy. R. L. Dixon, Wahjamega.—p. 722.
Hypnotism and Brain Physiology. I. M. Altshuler, Detroit.—p. 725.
Management of Strabismus Patients. P. Heath, Detroit.—p. 729.
Tuberculosis in Childhood. B. H. Douglas, Northville.—p. 733.

Use of Chaulmoogra Oil in Tuberculous Laryngitis.—Chaulmoogra oil has proved very successful in Snapp's experience in twenty-five cases. A 20 per cent solution in olive oil has been used in practically all instances, and the method of application has been that described by Lukens. Chaulmoogra oil is not a specific, and it should not replace all other methods or forms of medication, such as the electric cautery or heliotherapy. Its greatest value is in the relief of pain and dysphagia.

Missouri State M. Association Journal, St. Louis

24: 525-566 (Dec.) 1927

*Therapeutic Malaria in General Paresis. J. F. McFadden, St. Louis.—p. 525.
Malaria Cause of Obscure Symptoms in Surgery. L. H. Slocumb, St. Louis.—p. 529.
Thyroidectomy and Factors Influencing Mortality: Preoperative Care of Goiter Patients. L. P. Engel, Kansas City.—p. 530.
Foreign Bodies in Food and Air Passages. D. L. Shumate and W. B. Black, Kansas City.—p. 533.
Significance of Ureteral Kink. C. K. Smith and N. F. Ockerblad, Kansas City.—p. 536.
Mastoiditis in Infants. H. W. Lyman, St. Louis.—p. 541.
Prenatal, Natal and Postnatal Care. E. Lissack, Concordia.—p. 543.

Therapeutic Malaria in General Paralysis.—Of twelve patients treated by McFadden, improvement resulted in full remissions in three. Of 1,069 cases collected from the literature, full remissions resulted in 325, and improvement in 157. The remaining cases did not evidence any improvement.

New York State J. Medicine, New York

27: 1349-1404 (Dec. 15) 1927

Two Safety Measures in Cataract Extraction. W. S. Atkinson, Watertown.—p. 1349.
*Congenital Cysts of Kidneys. E. P. Ward, Flushing.—p. 1352.
Id.: E. F. Kent, Brooklyn.—p. 1356.
First Year of Medical Practice Act. H. Rypins, Albany.—p. 1358.
Some of More Common Lower Abdominal Conditions and Emergencies Occurring in Both Male and Female. J. B. Deaver, Philadelphia.—p. 1362.
Indications for Radiotherapy in Uterine Lesions. W. P. Healy, New York.—p. 1366.

Congenital Cysts of Kidneys.—Ward reports a case of bilateral polycystic kidneys in which a nephrectomy was performed; the patient survived, and, ten months later, is living and well. A review of 14,000 autopsies shows the polycystic form occurring forty times and the monocystic form, ninety-five times.

Oklahoma State M. Association Journal, Muskogee

20: 323-350 (Dec.) 1927

Toxemias of Pregnancy. T. H. McCarley, McAlester.—p. 323.
Physical Therapy in Obstetrics and Gynecology. A. C. Hirshfield, Oklahoma City.—p. 327.
Kidneys During Pregnancy. E. E. Rice, Shawnee.—p. 330.
Management of Occipitoposterior Positions of Fetal Head in Labor. R. H. Harper, Afton.—p. 332.
Extra-Uterine Pregnancy. F. M. Sanger, Oklahoma City.—p. 333.

Public Health Reports, Washington, D. C.

42: 3005-3059 (Dec. 9) 1927

*Benzocaine-Chaulmoogra Oil in Treatment of Leprosy. F. A. Johansen, Carville, La.—p. 3005.
*Significance of Spleens Palpable on Deep Inspiration in Measurement of Malaria. K. F. Maxcy, M. A. Barber and W. H. W. Komp, Washington, D. C.—p. 3010.

Use of Benzocaine-Chaulmoogra Oil in Leprosy.—Crude chaulmoogra oil, in combination with benzocaine dissolved for convenience in olive oil, was injected by Johansen into twenty-four lepers, in comparatively large doses, twice weekly, over a period of six months, with a negligible amount of pain, slight discomfort from pressure, and only a few oil abscesses (0.2 per cent, such as are not infrequently encountered when an oil is injected intramuscularly). This preparation is said to have the advantage of not causing pain and of absorbing readily, thereby giving the patient a uniform amount of chaulmoogra oil over a definite period of time. Of the twenty-four patients, six showed marked improvement; twelve showed moderate improvement, and five showed slight improvement; in one, the condition was unchanged, and none became worse.

Significance of Palpable Spleen.—In a series of preliminary examinations of school children in a malarious and in a nonmalarious section, an attempt was made by Maxcy et al. to gage the difference in the percentage of positive spleens found by examining the child when it was lying down and thoroughly relaxed. Among the first mentioned group, and including only white patients, there were 264 cases; the spleen was palpable in 25.8 per cent. Of 303 blood examinations made in the same group, 1.75 per cent were positive. In the second group, the spleen was also palpable in 25.8 per cent of 221 cases, but only 1.9 per cent of 135 blood examinations were positive. Of 187 colored children from a nonmalarious region, 9.3 per cent had palpable spleens; of 349 from a malarious region, 15.5 per cent had palpable spleens. Of those whose blood was examined, 1.5 per cent and 17.6 per cent, respectively, gave positive reactions. There is much evidence to indicate that many normal spleens are included in the spleen classification "tip just palpable on inspiration." The fact that a spleen is palpable does not, of necessity, indicate that it is pathologically enlarged. In those parts of the United States where malaria is lightly endemic and the use of quinine is widespread, the spleen and blood rates are low in comparison with those in tropical countries.

42: 3061-3112 (Dec. 16) 1927

*Tetanus Following Vaccination Against Smallpox. C. Armstrong, Washington, D. C.—p. 3061.
Disposal of Zyklon-B Residue Following Fumigation of Holds of Vessels. G. C. Sherrard, Washington, D. C.—p. 3071.

Tetanus Following Vaccination Against Smallpox.—A study made by Armstrong of cases of postvaccination tetanus which have developed in this country over a period of several years has revealed that without exception the lesions were covered during all or part of their active course by some sort of shield or dressing strapped to the vaccination site. In the great majority of instances, the vaccination area was large—from one-fourth to five-eighths inch in diameter. The cases for which data are available, have, without exception, followed primary "takes." A proper vaccination is defined as one in which the insertion is not over one-eighth inch in its greatest diameter, made by some method which does not remove or destroy the epidermis. Such insertions treated openly, i. e., without the use of shields or dressings strapped to the site, have never been followed by postvaccination tetanus.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2: 967-1012 (Nov. 26) 1927

Diathesis. A. Garrod.—p. 967.
Action of Expectorants. J. A. Gunn.—p. 972.
Immunity: I. Certain Practical Aspects of Immunity. R. A. O'Brien. —p. 975.
Id.: II. Biologic Principles in Immunity. C. H. Browning.—p. 978.
Desensitization by Peptone Before Laparotomy. M. Dixon.—p. 985.
Epispadias: Absence of Anus. A. K. Thomas.—p. 985.
*Apparent Infectivity of Cancer. J. Bernstien.—p. 986.

Apparent Infectivity of Cancer.—Bernstien reports a case of cancer of the cervix in the wife and cancer of the glans penis in the husband. The history of both cases suggested that the husband may have implanted cancer onto the wife's cervix.

Journal of Hygiene, London

27: 1-112 (Nov.) 1927

*Serum Prophylaxis of Measles. A. N. Kingsbury and M. Watson.—p. 1.
Epidemiology of Typhoid. I. J. Kligler.—p. 14.
*Fungi Causing Ringworm in Children. J. G. Hare and P. Tate.—p. 32.
*Tubercle Bacilli in Feces of Apparently Healthy Cows. R. S. Williams and W. A. Hoy.—p. 37.
Causes of Physical Degeneracy of Mexican Indians After Spanish Conquest. Z. Nuttall.—p. 40.
Chemical Nature of Toxic Substances Produced by Salmonella Group of Organisms. E. E. Ecker and C. Rimington.—p. 44.
Diphtheria Prevalence in Hampstead. J. G. Forbes.—p. 49.
*Weil-Felix Reaction in Typhus Fever. R. Cruickshank.—p. 64.
*Refection, Transmissible Change in Intestinal Content. L. S. Fridericia, and others.—p. 70.
*Spontaneous Cures in Rats Reared on Diet Devoid of Vitamin B and Antineuritic Vitamin. M. H. Roscoe.—p. 103.
Proteus Pseudovaleriae in Man. A. de Assis.—p. 108.

Serum Prophylaxis of Measles.—A series of outbreaks of measles on rubber plantations has been controlled by Kingsbury and Watson by the use of convalescent serum. Consideration of the virulence of the virus and the number of the nonimmune cases on the estates indicates that the injection of convalescent serum was a prophylactic measure of real value. The most satisfactory dosage for *en masse* prophylactic treatment of children was 3.5 cc. of serum. Inoculated children who subsequently developed measles suffered from a very mild form of the disease. The administration of the serum in two cases of measles colitis was followed by improvement in one instance. Intradermal injection of convalescent serum was not followed by a blanching of the measles eruption. Kingsbury and Watson suggest that the emergency establishment of serum depots would be most useful for combating the serious epidemics which sometimes occur in the tropics.

Fungi Cause Ringworm.—Cultures were made by Hare and Tate from sixty-nine cases of ringworm in children, and the following microsporums were isolated from fifty-four: *Microsporum audouini* from forty-eight cases; *M. lanosum* and *M. felineum* each in one case, and three species not yet identified. *Endothrix* trichophytons were found in 17 per cent, and include *Trichophyton crateriforme, T. sulfureum, T. acuminatum* and *T. violaceum.*

Tubercle Bacilli in Feces of Apparently Healthy Cows.—Of 391 cows in apparently good health whose feces were examined by Williams and Hoy, six were excreting tubercle bacilli. When the feces of almost all the cows on fourteen farms were examined, it was found that five cows on four farms were excreting tubercle bacilli.

Weil-Felix Reaction in Typhus Fever. — Cruickshank endeavored to evaluate this test as a diagnostic aid in typhus in a small series of cases—only eight. The extent to which agglutinins for *B. proteus* X 19 (Weil-Felix) were formed in the blood varied directly as the severity of the illness, since with the older and more severely ill patients a much higher dilution of serum agglutinated the organism at or near crisis than was the case with the younger patients, who were less acutely ill. A positive reaction was not obtained before the fifth day of illness, or in any case before the characteristic rash appeared, so that the reaction is of little value as a factor in the early diagnosis of typhus. The reaction remained positive for the longest period in those patients whose serum agglutinated in highest dilution and in these patients a positive reaction (from 1:25 to 1:50) was still present from nine to twelve weeks after infection, whereas in the milder cases the reaction became negative in from six to eight weeks from the onset of illness. In view of this heterologous reaction in typhus, it is interesting that the Wassermann reaction obtained before the crisis was positive in four out of six cases. It was still positive in two of the most severely ill patients a week after the crisis, but was negative in all cases a week later.

Refection: A Restoring Change in Nutrition.—An accidental observation made in one experiment, namely, that it is possible to transmit artificially the capacity to dispense with vitamin B in the diet, led Fridericia et al. to study the phenomenon further. Since then, it has been produced in about eighty rats. All symptoms of vitamin B deficiency disappear. The weakness in the hind legs, usually present, vanishes. The body temperature of the rats, regularly dropping in the later stages of vitamin B deficiency to 35 C. or less, keeps normal at from 36.5 to 37.6 C. The authors propose to name this restoring change refection (Latin: *reficere*, restore). To induce refection will be termed to refect; and agencies capable of refecting will be termed refectious.

Unchanged Starch Grains Necessary to Refection.—Roscoe observed that in the case of rats receiving adequate supplements of the antineuritic vitamin, or of both the water soluble B vitamins previous to refection, normal growth was maintained after these supplements were withdrawn. These observations are contrary to those described by Fridericia and his colleagues. In view of the fact that the eating of their own feces seemed necessary for the continuance of refection in rats, it was thought probable that the state might be induced by the feeding of feces from refected rats to others. This, as Fridericia and his colleagues found, proved to be the case. As undigested starch was present in the feces of all refected rats, it was thought advisable to try the effect of varying the form of carbohydrate in the basal diet deprived of water soluble vitamins. Fridericia and his colleagues found defection impossible when the starch of the experimental diet was replaced by sugar, but possible when it was replaced by dextrine containing a small proportion of starch. The results of Roscoe's experiments agree, in general, with these conclusions. Experiments were also undertaken to determine whether refection would be possible if the starch was altered by cooking. Refection ceased when refected animals were fed on this diet, and definite cases have not occurred spontaneously on the diet. That refection does not occur when the diet is cooked or when the starch is replaced by dextrine suggests that the presence of unchanged starch grains in the intestine is a necessary factor in refection.

Journal of State Medicine, London

35: 683-744 (Dec.) 1927

Twort-D'Herelle Phenomenon. R. Bruynoghe.—p. 683.
*Bilharziasis in Egypt. A. B. Ibrahim.—p. 702.
*Hereditary Factor in Acute Rheumatism. A. B. Jones.—p. 709.

Bilharziasis in Egypt.—Bilharziasis is at present the most prevalent disease in Egypt. According to Ibrahim, it flourishes where fresh water abounds. The distribution of the disease corresponds closely to the distribution of the irrigation system. Where the ancient basin system of irrigation still persists, bilharziasis is at its lowest.

Hereditary Factor in Acute Rheumatism.—Acute rheumatism is hereditary, but, Jones says, this signifies merely that a child's constitution is such that—given unfavorable environmental surroundings—his inborn tendency thereto is evoked, while in other and more favorable conditions it would not have materialized. The influence then of temperature, humidity, altitude or other environmental factors is truly speaking evocative rather than causative. The liberating stimuli that elicit the latent hereditary bias may be positive, e. g., cold and damp, or negative, as lack of sunlight or vitamins. Hence, the degree to which the influence of heredity can be controlled will depend on the measure of accuracy attained in identifying the evocative stimuli responsible in individual instances.

Lancet, London

2: 1221-1274 (Dec. 10) 1927

Subconscious Factor in Medicine. B. Pierce.—p. 1221.
*Fractures of Metatarsal Bones by Indirect Violence: Avulsion Fracture of Tubercle of Fifth Metatarsal. A. G. R. Foulerton and G. F. Stebbing.—p. 1225.
*Duodenal Ulcer in Female: Cholecystoduodenal Syndrome. D. P. D. Wilkie.—p. 1228.
*Alkali Treatment in Diphtheria and Scarlet Fever. B. A. Peters.—p. 1231.
*Rôle of Carbon Dioxide in Growth of Normal and Tumor Cells. J. C. Mottram.—p. 1232.
*Induction of Labor in Pelvic Deformity and Maternal Illness: Treatment of Antepartum Hemorrhage. E. M. Townend.—p. 1234.
*Less Common Causes of Obstructive Jaundice. A. R. Short.—p. 1235.
*Eradication of Bilharziasis. M. Khalil.—p. 1235.

Fracture of Base of Fifth Metatarsal.—Foulerton and Stebbing call attention to a fracture of the base of the fifth metatarsal bone, an avulsion of the tubercle from the rest of the base. This fracture is caused, in some cases at any rate, by a sudden contraction of the peroneus brevis muscle and may occur while the foot is off the ground. In this fracture, crepitus is unobtainable. Instead of the fractured surfaces being held in close apposition, the torn-off tubercle is drawn backward by the attached peroneus brevis muscle, and tilted upward in some cases so that there is a wedge-shaped space between the separated fragments, with the base of the wedge downward. The authors report eight cases of uncomplicated fracture of tubercle of the fifth metatarsal bone; three cases of separation of the tubercle with history of possible direct violence, and a case of fracture of the second metatarsal bone.

Duodenal Ulcer; Cholecystoduodenal Syndrome.—Wilkie presents figures which point to the fact that duodenal ulcer has increased in frequency during the past twenty years. Duodenal ulcer is a common disease in the female, more so than gastric ulcer. The typical history is much less frequently given than in the male, hunger-pain often being absent. The "catch meals" of the housewife are probably responsible for the indefinite picture. Under the term cholecystoduodenal syndrome a clinical picture, often confused with that of cholecystitis, is described. Operative treatment on conservative lines is recommended.

Alkali Treatment of Diphtheria and Scarlet Fever.—Peters again calls attention to the the fact that an acidosis (a reduced alkali reserve), associated with ketonuria, occurred in the more toxic cases of diphtheria, and that the administration of alkalis tended to prevent the pernicious vomiting and circulatory failure which may occur in the second week of the disease. His routine treatment of all cases of diphtheria has included the administration of 30 grains (1.95 Gm.) of sodium bicarbonate, 5 grains (0.32 Gm.) of potassium bicarbonate and 7 grains (0.46 Gm.) of calcium carbonate in four hour doses, until the morning urine is alkaline to litmus, which takes three or four days. For younger children, the dose is halved. Alkalis are administered in scarlet fever in the same doses as for diphtheria during the acute stage only, usually for about a week. An experience, extending over seventeen years, is reviewed.

Rôle of Carbon Dioxide in Etiology of Cancer.—Mottram believes that there is evidence of the origin of carcinoma in situations of diminished blood supply, but its spread through the body, such as lymphatic permeation, and growth in lymphatic glands, spleen, liver and bone marrow, suggests that situations distant from the circulation are favored. There is evidence that an environment of high carbon dioxide tension encourages cells to anabolize, dedifferentiate, and grow, while an abundance of oxygen and an absence of carbon dioxide have a reverse effect. In experiments no evidence of cellular activity was obtained in the complete absence of oxygen, even when dextrose was added. The experiments support Warburg's observations, in that Jensen's rat sarcoma presents activity at much lower tensions of oxygen than do normal cells.

Induction of Labor.—Statistics presented by Townend on the induction of labor show that, when disproportion is the only abnormality, the mother healthy, and the presentation normal, more than 90 per cent of the infants are still alive and well, their ages ranging from 3 months to 4 years. Moreover, 100 per cent of the mothers were discharged alive and with a sound uterus and abdominal wall. Jacques's esophageal bougie is used to induce labor, and reduces the time to eighteen hours.

Cause of Obstructive Jaundice.—Short asserts that a group of cases exists in which there is obstruction of the bile passages without either gallstones, malignant new growth, or cirrhosis of the head of the pancreas. Patients belonging to this group are usually young women, and the jaundice is persistent, but pain is not conspicuous. Three examples of this clinical syndrome are cited; all were verified by operation, and the cause was found and removed, the jaundice disappearing in each case. Two patients had enlarged lymphatic glands pressing on the common bile duct; these were tuberculous in one case and simple inflammatory in the other. The third case showed a condition which may be called vateritis.

Eradication of Bilharziasis.—In an oasis infested with bilharziasis (63.5 per cent of the inhabitants), Khalil says copper sulphate was continuously added to the stream supplying the drinking water for four days and nights by an especially improvised apparatus. The dilution aimed at was five parts of copper sulphate to a million of water. At the end of the experiment, all bullinus snails were dead. After six months the area was visited again, and no living bullinus snails could be found. No deleterious effects were observed on the vegetations, animals or man as a result of the experiment.

Quarterly J. Experimental Physiology, London

18: 199-300 (Dec. 7) 1927

Postcontraction Proprioceptive Reflex: Its Augmentation and Inhibition. F. Allen and C. H. O'Donoghue.—p. 199.
*Influence of Colored Lights on Sensitivity of Eye: Theories of Color Vision. H. E. Roaf.—p. 243.
*Deflection of Arneth Count by Ultraviolet Rays: X. W. P. Kennedy and W. A. R. Thompson.—p. 263.
Experiments with Serum. W. Burridge.—p. 267.
Action of dl-Glyceric Aldehyde on Isolated Heart. H. G. Reeves.—p. 277.
Effect of Circulation on Skin-Constrictor (Psychogalvanic) Reflex. H. B. A. R. Densham and H. M. Wells.—p. 283.
Influence of Respiratory Movements on Cutaneous Circulation. R. J. Collier, H. B. A. R. Densham and H. M. Wells.—p. 291.
Certain Effects Produced by Shock and Death on Vessels of Skin. H. B. A. R. Densham and H. M. Wells.—p. 297.

Theories of Color Vision.—Roaf discusses his experimental results in relation to theories of color vision. It is suggested that the most probable explanation is that color discrimination is due to color screens in front of certain of the receptors. The results show why a blue screen is the best to protect the eyes from excessively bright lights. A blue filter on the windshield of a motor car will protect the eyes from the direct rays of bright headlights, while allowing one to see the road past the edge of the filter.

Effect of Ultraviolet Rays on Arneth Count.—A preliminary report is given by Kennedy and Thompson on the effect of ultraviolet rays on the Arneth count of rabbits. It is shown that a single exposure can produce a definite deflection of the count, and that thick window glass is opaque to the active rays. Fur is to a large degree protective against the rays, and it needs to be closely clipped or shaved if the full effect is to be obtained.

Tubercle, London

9: 105-156 (Dec.) 1927

*Results with "Sanocrysin" in Pulmonary Tuberculosis. F. Heaf.—p. 105.
*Artificial Pneumothorax Treatment Complicated by Pregnancy. A. P. Ford.—p. 112.
Isolation of Tubercle Bacilli from Contaminated Tuberculous Materials. H. J. Corper and N. Uyei.—p. 115.

Results with "Sanocrysin" in Pulmonary Tuberculosis.—Heaf's experience with "Sanocrysin" in the treatment of fifteen cases of pulmonary tuberculosis in all stages of the disease has been that: 1. The results of treatment are not sufficiently certain to warrant its use before routine or collapse therapy has been tried. 2. The contraindications are such that only a small percentage of cases are suitable for the treatment. 3. If the treatment is given, the dosage should be regulated so as to produce only the slightest reaction, or

better still, no reaction at all. 4. More knowledge as to the elimination of the drug is needed before the treatment can be regarded as safe. 5. In certain cases there has been remakable progress, and in the majority, improvement, but the action of the drug is so irregular that it is impossible to predict a good result in any case chosen for the treatment. 6. The most constant successes have been in cases in which the treatment was used to supplement collapse therapy, and further investigations along these lines are desirable. 7. The treatment can be given to children with beneficial results. 8. In the majority of cases which improved under "Sanocrysin," after routine treatment had failed, the permanence of the degree of arrest of the disease is distinctly encouraging.

Artificial Pneumothorax Complicated by Pregnancy.—Ford asserts that the induction of abortion is not indicated in a patient suffering from pulmonary tuberculosis who becomes pregnant during artificial pneumothorax treatment, provided the general condition remains satisfactory. The fact that one lung is completely collapsed does not appear to have any deleterious effect on the confinement. A case in point is cited.

Bulletin Médical, Paris

41: 1123-1150 (Oct. 15) 1927

Centenary of Villemin. Vaudremer.—p. 1129.
Development of Tubercle Bacillus. A Vaudremer.—p. 1130.
*Clinical Forms, Diagnosis and Surgical Treatment of Ileocecal Tuberculosis. J. Charrier.—p. 1134.
*Diagnosis and Treatment of Renal Tuberculosis. M. Larget and J. P. Lamare.—p. 1138.
*Gastric Disturbances in Tuberculosis. M. Harmelin.—p. 1141.
*Treatment of Surgical Tuberculosis with Vaccines. H. Vanderlinden.—p. 1144.

Clinical Forms, Diagnosis and Surgical Treatment of Ileocecal Tuberculosis.—The onset of ileocecal tuberculosis may be marked by enteralgia, enteritis, occlusion or perforation. The first named is by far the most frequent. The disease may be of the hypertrophic, the ulcerocaseous or the localized form. If occult blood and tubercle bacilli are found in the stools, radiologic examination revealing ileac stasis with dilatation and presence of opaque fluid six, eight or ten hours after the meal, emptiness of the cecum and a part of the ascending colon, and colic hyperkinesia supports a diagnosis of ileocecal tuberculosis. Clinically, the diagnosis is often difficult at the beginning, before the appearance of the tumor. The only treatment is surgical. Exeresis may be performed in one or in two stages. Exeresis permanently cures intestinal tuberculosis in from 30 to 40 per cent of the cases.

Diagnosis and Treatment of Renal Tuberculosis.—When consulted by an adult complaining of cystitis, simple polyuria, albuminuria or hematuria, the possibility of beginning renal tuberculosis should be considered. Pains in the lumbar region or urinary incontinence should also rouse suspicion. The total urine excreted should be examined, the tubercle bacillus sought and inoculations into guinea-pigs made. Certain cases must be treated by nephrectomy, nephrostomy or cystostomy. Other cases may be treated medically. Careful diet, tonics and methylene blue should be given. The bladder may be treated by instillations. Larget and Lamare report one case treated with injections of Vaudremer's vaccine. Five other cases at present under treatment are being benefited by the vaccine. Instillations of vaccine diluted with physiologic serum are of value in vesical lesions. The use of vaccine must be restricted to those patients who, being inoperable, have only renal tuberculosis or so-called external (*dites externes*) forms. Where there are pulmonary lesions in evolution or even fibrous pulmonary tuberculosis, the vaccine is contraindicated.

Gastric Disturbances in Tuberculosis.—Most students of the subject believe that there is a dyspepsia of the tuberculous. The stomach and the lung both receive fibers of the vagus. Many of these are injured during pulmonary tuberculosis. Food coming in contact with the gastric mucosa causes an irritation of the nerve filaments of the solar plexus, more particularly of the vagus, an irritation which causes a gastric reflex which must be combated. Radiologic examination most frequently reveals gastric ptosis with hour-glass stomach, less frequently dilatation of the cardiac zone or of the fundus involving the prepyloric region; sometimes there is a small stomach of the hypersthenic type. Hyperacidity is most frequently seen in the early stages and gives place to hypacidity at the terminal period. A suitable diet should be given. To quiet gastric burning, belladonna, combined with kaolin, should be administered before meals. In some cases atropine may be given subcutaneously, beginning with 0.25 mg. Small pieces of ice, chloroform water and bromoform water may be used to control the emetic cough. If these fail, menthol may render service.

Treatment of Surgical Tuberculosis with Vaccines.—Vaccine therapy yields 95 per cent of cures in surgical tuberculosis and hence gives a better prognosis than surgery, Vanderlinden states. He reports twelve cases, in which Vaudremer's vaccine was used.

Écho Médical du Nord, Lille

31: 536-548 (Oct. 8) 1927

*Staphylococcus Epidural Abscess Secondary to Chickenpox. R. Pierret and A. Pruvost.—p. 536.
Cancer as Cicatricial Vitiation. G. Sivuve-Evausy.—p. 537. C'td.
Myomectomy Preliminary to Hysterectomy in Fibroma of Broad Ligament. J. Vanverts.—p. 540. C'cn.
Conservation of Ovarian Tissue in Operations for Bilateral Cystic Tumors of Ovary. J. Vanverts.—p. 541.

Staphylococcus Epidural Abscess Secondary to Chickenpox.—In a child, aged 22 months, symptoms of meningitis appeared seventeen days after the onset of ckickenpox. Pus obtained by lumbar puncture contained *Staphylococcus aureus*. A diagnosis of epidural abscess was made. Injections of staphylococcus vaccine and of a colloidal silver preparation were given and the child recovered. Pierret and Pruvost know of no other case of staphylococcus epidural abscess complicating chickenpox.

Gazette Hebdomadaire des Sciences Med., Bordeaux

48: 657-672 (Oct. 16) 1927

*Case of Glycosuria with Right Homonymous Lateral Hemianopsia. E. Ginestous and M. Labuchelle.—p. 660.

Case of Glycosuria with Right Homonymous Lateral Hemianopsia.—The patient whose case is reported by Ginestous and Labuchelle was found in 1912 to have glycosuria and to be losing weight. In 1920 there was right homonymous lateral hemianopsia, in 1923, ptosis of the right eyelid and hypesthesia of the left half of the head. He died in 1926 with symptoms of intense intracranial hypertension. The most interesting hypothesis and the one credited by the authors is that the diabetes, intracranial syndrome and terminal symptoms were steps in the slow development of a lesion of the infundibulopituitary region. A necropsy was not made.

Journal des Praticiens, Paris

41: 673-688 (Oct. 15) 1927

*Apyretic Tuberculosis in an Infant. Nobécourt.—p. 673.
"Hepatic Peril" in Operations on Biliary Tract. V. Pauchet.—p. 679.

Apyretic Tuberculosis in an Infant.—The case reported by Nobécourt is that of an infant, aged 2 months and 3 weeks, who was brought to the clinic because of digestive disturbances and a cough which had begun a week before. There were signs of tracheobronchial adenopathy on the left side with probable pulmonary involvement. Tuberculin reactions were positive. There were anemia, splenomegaly and mild rachitis. There were no clinical or hematologic signs of syphilis. The general condition was satisfactory, apyrexia and monothermia being well marked. A second apyretic case occurred in an infant, aged 6½ months.

Lyon Médical, Lyons

140: 449-480 (Oct. 30) 1927

Radiology of Pyloroduodenal Diseases. H. Béclère and P. Porcher.—p. 449.
*Epileptiform Attack in Course of Production of Artificial Pneumothorax. A. Brunerie.—p. 451.

Epileptiform Attack in Course of Production of Artificial Pneumothorax.—During insufflation made to produce pneumo-

thorax, Brunerie's patient, a woman, aged 30 years, had an epileptiform attack without true loss of consciousness but with mental confusion lasting twenty-four hours. There was no nervous or mental hereditary taint and the patient herself was of phlegmatic temperament. Adhesions in the collapsed lung were probably a factor in producing the attack.

Revue de Médecine, Paris

44: 151-277, 1927

*Duration and Factors of Evolution of Cancers. M. Renaud.—p. 151.
Chronic Intestinal Auto-Infection. P. Desgeorges.—p. 163.

Duration and Factors of Evolution of Cancers.—The location of the tumor is one of the most important factors in its malignancy. Other factors are infection, form and growth of the tumor, nature of the tumor (soft tumors are more speedily fatal than hard ones), location of metastases, recurrence after operation. The histologic form of a cancer plays an important rôle in its power of extension. The evolution of cancer is that of a disease in which the development of local lesions and their complications regulate the progress and determine the severity and the duration.

Revue Médicale de la Suisse Romande, Geneva

47: 853-920 (Oct. 25) 1927

Radiotherapy in Benign Gynecologic Lesions. G. Meyer.—p. 853.
*Treatment of Constipation by Anal Massage. M. H. Burnier.—p. 864.
Is Jennerian Vaccination Harmless? M. E. Juillard.—p. 871.
Local Complications of Antismallpox Vaccination. A. Cramer.—p. 893.
International Conference on Goiter. L. Michaud.—p. 896.

Treatment of Constipation by Anal Massage.—Five cases of constipation reported by Burnier were cured by anal massage with an instrument devised by the author. He is convinced that this is the method of choice, since it brings back the normal functioning of intestinal peristalsis without intoxication and without loss of efficacy after continued use.

Schweizerische medizinische Wochenschrift, Basel

57: 1017-1040 (Oct. 22) 1927

*Egyptian Splenomegaly. A. Schweizer.—p. 1017.
*Prophylactic Administration of Heart Tonics. J. Friedmann.—p. 1027.
Blood and Carbohydrate Metabolism. A. Gigon.—p. 1029.
*Specific Skin Reactions in Allergic Infections. M. Juon.—p. 1031.
Isacen and Appendectomy. H. Mehlin.—p. 1037.

Egyptian Splenomegaly.—Schweizer examined the spleens removed at operation from five patients with Egyptian splenomegaly. Notes from the histories indicated that the symptoms were of from two to five years' standing; but information on this point was vague. High grade anemia was not present. There was leukopenia; typical lymphocytosis was seen in only one case. Neither parasites nor their eggs had been detected in urine or stools. The pathologic examination revealed fibrous foci containing the mycelia of a fungus. These mycelia were often surrounded by giant cells. They contained iron. It appears that certain cases of Egyptian splenomegaly belong to a new group of splenic diseases, mycotic splenomegaly.

Prophylactic Administration of Heart Tonics.—Friedmann investigated on the frog's heart, isolated and *in situ*, the influence of cardiac tonics in preventing injury to the heart from alcohol or chloroform. His conclusions are: treatment with digitalis enables the heart to withstand the injury better; digitalis entire is more effective than a digitoxin-free preparation; a portion of the digitalis may be replaced by caffein, but the latter alone has but slight influence.

Specific Skin Reactions in Allergic Infections and Their Relation to the Sedimentation Speed of Erythrocytes.—In investigations in 100 cases (tuberculosis, trichophytosis and other diseases) during the allergic phase manifested by intradermal reaction to tuberculin or trichophytin, Juon failed to find any correlation between the intensity of the skin reaction and the sedimentation speed of erythrocytes. He made the observation that later reactions occurring on the site of a primary allergic reaction are more intense than reactions on other sites. Later than twenty-four hours after the injection, however, the heterotopic reactions sometimes equal or surpass in intensity the homeotopic reactions.

Archivio Italiano di Chirurgia, Bologna

17: 489-596 (April) 1927

Mammary Cysts. L. Lazzarini.—p. 489.
Perforated Duodenal Ulcer in a Child. G. Pototschnig.—p. 508.
Etiology of Mammary Cysts. C. Di Gioia.—p. 513.
Healing of Intra-Articular Fractures. P. Nigrisoli.—p. 532.
Melanoma. G. M. Antonioli.—p. 537.
*Herpes Zoster. G. Pieri.—p. 545.
Sympathectomy in Raynaud's Disease. L. Durante.—p. 552.
Removal of Adventitia from Carotid Artery. N. V. Bedarida.—p. 565.
Renal Enervation. G. Nisio.—p. 577.

Resection of Spinal Ganglion in the Treatment of Rebellious Herpes Zoster.—In a case of intractable herpes zoster, removal of the corresponding spinal ganglion was followed by recovery. The cure is now of ten months' duration. Microscopically, the ganglion disclosed a chronic inflammatory process of a destructive character.

Gazzetta degli Ospedali e delle Cliniche, Milan

48: 1033-1056 (Oct. 30) 1927

*Chestnut Flour. P. Brusa.—p. 1035.

Chestnut Flour as an Infant Food.—Brusa reports experiments bearing out the richness of chestnut flour in vitamins A and B. It lacks, however, vitamin C. Chestnut flour, 8 Gm., with 20 Gm. of sugar, 100 cc. of milk and 100 cc. of water, may often be used advantageously in infant feeding.

Policlinico, Rome

34: 1615-1654 (Nov. 7) 1927. Practical Section

*Irradiated Air and Milk Secretion. L. Spolverini.—p. 1615.
New Type of Sigmoid Membrane. E. Leo.—p. 1623.

Irradiated Air and Milk Production.—Inhalation of air irradiated with ultraviolet rays doubled from the very beginning a deficient milk secretion in lactating women. The increase persisted for a long time. It seems reasonable to expect the same effect in milk-producing animals.

34: 1689-1734 (Nov. 21) 1927. Practical Section

*Raynaud's Disease. M. Ronzini.—p. 1689.
*Bismuth in Rheumatism. C. Secco.—p. 1699.

Cure of Raynaud's Gangrene with Arsphenamine.—In a case of spontaneous gangrene of the foot of Raynaud's type, treatment with arsphenamine (given intravenously) was followed by complete healing and subsidence of the pain. Even in the absence of signs of syphilis, it is worth while to try arsphenamine in such cases before resorting to the knife.

Bismuth in Chronic Articular Rheumatism.—In thirty cases of nonsyphilitic chronic articular rheumatism, bismuth carbonate suspended in vegetable oil secured partial but beneficial and constant results.

34: 501-556 (Nov. 15) 1927. Surgical Section

Intestinal Bacteria After Cholecystectomy. G. Balice.—p. 501.
*Appendicitis Complicated by Hernia. A. Catterina.—p. 519.
Retractile Mesenteritis. V. Jura.—p. 535.

Perforating Acute Appendicitis with Hernia and Ileus.—The interesting feature of Catterina's case of perforated acute appendicitis lay in its being complicated by hernia of the small intestine through a mesenteric opening, and by ileus and peritonitis. The case seems unique in the literature. The patient recovered after operation.

Boletín de la Soc. de Obst. y Ginecol., Buenos Aires

6: 385-438 (Oct. 30) 1927. Partial Index

*Uteroplacental Apoplexy. R. Mestre.—p. 390.
*Foreign Body in Peritoneal Cavity. G. F. Nunes.—p. 401.
Partial Symphysiotomy. E. Zárate.—p. 434.

Uteroplacental Apoplexy.—In the two cases here reported the apoplexy developed early, in the seventh month of pregnancy. Both women recovered after partial hysterectomy. The seriousness of the condition must not be judged from the pulse alone.

Nine Year Retention of Catheter in Uterus.—According to the patient, a midwife had inserted a urethral catheter for the purpose of producing abortion. When she tried to remove it, the instrument had disappeared within the uterus. Two years afterward a normal pregnancy went to full term. Nine

years after the catheter was introduced, abdominal attacks occurred, with nausea and pains. A laparotomy revealed the catheter in the pelvic cavity. Its rubber covering had completely disappeared.

Brasil-Medico, Rio de Janeiro

41: 1197-1222 (Nov. 12) 1927

*Botelho's Neoreaction. H. Póvoa.—p. 1197.
Gradenigo's Syndrome. P. Mangabeira Albernaz.—p. 1200.

Botelho's Neoreaction in Cancer.—Botelho's latest test should be used as a diagnostic aid in all suspected cases of cancer, especially internal cancer. In the latent phase of cancer, it is often unreliable, and in the early stage biopsy is more dependable. Out of thirty-five cases reported by Póvoa, the test proved positive in twenty-seven.

Revista de Medicina y Cirugia, Caracas

10: 149-164 (Sept. 30) 1927. Partial Index

*Rabies. B. Perdomo Hurtado.—p. 160.

Long Incubation of Rabies.—In a child, aged 10 years, bitten by a rabid dog, the incubation period extended to 103 days. The patient died after seven days of illness. The long incubation may have been due to the action of the treatment, which was started two days after the bite, or to the injury being in the leg.

Archiv für Psychiatrie und Nervenkrankheiten, Berlin

82: 1-122 (Oct. 8) 1927

Penal Code from Psychiatrist's Viewpoint. E. Schultze.—p. 1.
*Pains of Visceral Origin. M. Lapinsky.—p. 43.
Schizophrenia Grafted on Feeblemindedness. R. Neustadt.—p. 78.
Welfare Work for Psychopaths. F. Salinger.—p. 85.
*Increase of Attempted Suicides and Their Reasons. W. Oppler.—p. 95.
Brain in Astereognosis. W. Riese.—p. 110.

Pains of Visceral Origin.—Certain viscera, the liver and the gastro-intestinal tract, especially the cecum, may, when diseased, cause radiating pains in the right arm. There are cases in which the peripheral vessels play a part in the radiation of pain, in which, by narrowing and widening, they contribute to a change in the molecular balance of the peripheral nervous system. The reactions thus determined rise into consciousness as a feeling of pain. In such cases, the radiation of pain depends on a checking or freeing process of the vessel centers, which is evoked by the rising of stimulation waves from a visceral focus of disease to the spinal cord. Lapinsky explains the mechanism of the irradiation in detail.

Increase of Attempted Suicides and Their Reasons.—While suicides have increased in Breslau only in women in the years since the war, attempted suicides have considerably increased in men and women. That so many attempts have failed since the war is due to the fact that psychopaths, on whom the increase depended, carry out the attempts without mature consideration. The motive is usually crime in women, and that as a result of increased economic activity, as well as marital troubles and household cares. Love affairs play a subordinate rôle. In the men, economic need and unemployment were the chief reasons for suicide, while crime was secondary. The fall in number of suicides in men in 1923 may be accounted for by the revival of industry which took place in that year.

Deutsche medizinische Wochenschrift, Berlin

53: 1847-1890 (Oct. 28) 1927

*Conditions of Sleep. Regelsberger.—p. 1847.
*New Method of Serodiagnosis of Typhoid and Paratyphoid. F. Hoder.—p. 1850.
Quantitative Examination of Gastric Function. Z. Stary and P. Mahler.—p. 1851.
Treatment of Simple and of Hypotrophic Pendulous Breast. J. Joseph.—p. 1853.
Cirrhosis of Lungs After Inhalation of Dust. T. Matthies.—p. 1854.
Defects and Progress in Treatment of Gonorrhea. Hagen.—p. 1856.
Conditions Between Blood Sugar Content and Coagulation Time. A. Partos and Švec.—p. 1857.
Classification of Parasitic Diptera Larvae in Human Skin and Eye. A. and M. Hobmaier.—p. 1858.
Cholesterol in Roentgen-Ray Sickness. F. Burgheim.—p. 1858.
Roentgen-Ray Apparatus for Office Practice. Schütz.—p. 1860.
Yoghurt and Kefir. E. Klebs.—p. 1860.
Treatment with Foam Baths. W. N. Clemm.—p. 1861.
Review of Results of Steinach's Operation in Germany. H. Stettiner.—p. 1861. C'td.
Nicotine-Free or Nicotine Poor Tobacco. L. Frank.—p. 1863.
Physicians of Welfare Organizations and Practicing Physicians. F. Rott.—p. 1863. C'cn.
Social Importance of Quackery. G. Lennhoff.—p. 1888. C'cn.
Relation of Physician to Athletics. A. Arnold.—p. 1889.

Conditions Determining Sleep.—Regelsberger points out that progress in elucidating the problem of sleep is a matter of recent date and began with investigations in the pathologic anatomy of encephalitis. The sleep of the brain and the sleep of the body are differentiated. The curves of each may be separately determined and to a certain extent one kind of sleep may exist without the other. Normally the curves correspond and such correspondence appears to be a condition of completely refreshing sleep, but slight disturbances are enough to bring confusion and with the best hypnotics the normal sleep curve is never exactly reproduced. His view is that bodily sleep, i. e., the vegetative transformation of the internal organs, is brought about through the ganglion cells in the central gray matter of the third ventricle, and that brain sleep is caused by exclusion of the cortex, i. e., by interruption of the afferent paths for conducting stimuli in the thalamus.

New Preparation for Serodiagnosis of Typhoid and Paratyphoid.—Hoder asserts that the suspension of killed bacteria described by him can be kept for at least a year without noticeable deterioration. The agglutination is specific. The flakes begin to precipitate slightly later than in fresh suspensions, but the end-results are practically the same.

Klinische Wochenschrift, Berlin

6: 2073-2120 (Oct. 29) 1927

Phenomena of Hearing in Recognition of Internal Diseases. E. Bass.—p. 2073.
*Sites of Formation of Bile Pigments. F. Rosenthal, H. Licht and E. Melchior.—p. 2076.
Group Specific Differentiation of Human Organs. I. L. Kritschewski and L. A. Schwarzmann.—p. 2081.
Glycerin Bouillon. E. Moro and W. Keller.—p. 2086.
Periodic Changes in Circulation Speed. K. Gollwitzer-Meier.—p. 2088.
*Effect of Ligation of Excretory Ducts of Pancreas on Blood Sugar in the Dog. K. Nather, R. Priesel and R. Wagner.—p. 2089.
Hyperexcitability of Neuromuscular System and Pregnancy Acidosis. D. Adlersberg and E. Klaften.—p. 2091.
*Origin of Pain in Peptic Ulcer. W. L. Palmer.—p. 2094.
Ability to Work and Treatment by Work in Neuroses. E. Leyser.—p. 2095.
Physiology of Sinus Caroticus. D. Danielopolu, A. Aslan, I. Marcu and G. G. Proca.—p. 2098.
Activators for Fibrin-Dissolving Ferments of Chicken Sarcoma. F. Demuth.—p. 2099.
New Observations on Heart Hormone. L. Haberlandt.—p. 2099.
Tetaniform Spasms During Synthalin Treatment. A. Lautenschläger.—p. 2101.
Origin, Growth and Healing of Cholesteatoma. H. Herxheimer. Sport Supplement.—p. 21.
Reply. H. Rautmann. Sport Supplement.—p. 23.

Sites of Formation of Bile Pigments.—From two series of experiments, on normal and hepatectomized dogs, Rosenthal, Licht and Melchior conclude that from 66 to 80 per cent of the bile pigment is formed in the liver. They produced bilirubinemia by intravenous injections of hemoglobin and take it as an indicator of the intensity of the formation of bile pigment in the organism. They criticize the conclusions of Mann and his co-workers. The mode of blood destruction is important in this regard and explains the paradoxic results of experimentation.

Effect of Ligation of Excretory Ducts of Pancreas on Blood Sugar in the Dog.—This operation should not be tried in diabetic patients, Nather, Priesel and Wagner counsel, before the reproducibility and permanence of Mansfeld's phenomenon (subsequent increase of insulin in the pancreas) are assured. In none of their eight experiments on dogs (six reported in the present article, two previously) could these authors reproduce the phenomenon.

Origin of Pain in Peptic Ulcer.—In more than 700 tests, Palmer was able to produce pain in gastric or duodenal ulcer by administration of solutions of hydrochloric acid (0.1-0.5 per cent.). It is important that the tests be made during a

period of pain. In general he found no connection between pain and tonus, motility or spasm of the stomach or duodenum. In 8.76 per cent of the tests made, gastric peristalsis either called forth or augmented the pains.

Medizinische Klinik, Berlin

23: 1637-1676 (Oct. 28) 1927

*Pathogenesis and Treatment of Peritonsillar Abscess. Stenger.—p. 1637.
Pathogensis of Icterus. Y. Ohno.—p. 1639.
Case of Acute Lymphogranulomatosis. E. Farkas.—p. 1643.
Case of Basilar Meningeal Carcinosis with Abnormal Cells in Cerebrospinal Fluid. R. Penecke.—p. 1645.
Administration of Excessive Amounts of Peptone in Testing Renal Function. F. Lebermann.—p. 1646.
Spontaneous Pneumothorax of Interesting Etiology. H. Rady.—p. 1648.
Relation of Smallpox to Chickenpox and of Chickenpox to Herpes Zoster. E. Bedő.—p. 1649.
Atropine Test in Peptic Ulcer. L. Mischkowski.—p. 1650.
Progress of Agar Fixation Method. P. Kuhn and K. Sternberg.—p. 1652.
Complement Fixation Reaction in Gonorrhea. E. Wreszynski.—p. 1653.
Compensation in Industrial Lead Poisoning. B. Chajes and C. Lewin.—p. 1661.

Treatment of Peritonsillar Abscess.—Stenger recommends evacuating the abscess in an early stage by a special maneuver which frees the upper pole of the tonsil and gives access to the upper amygdaloid fossa. The method is explained with illustrations.

Münchener medizinische Wochenschrift, Munich

74: 1819-1858 (Oct. 28) 1927

The Normal Abdomen and Its Mass. F. Crämer.—p. 1819.
*Birth Crisis in Blood Picture of the New-Born. W. Büngeler and P. Schwartz.—p. 1822.
*Intradural Injection of Solution of Pituitary in Pregnancy. K. Ehrhardt and H. Wiesbader.—p. 1827.
*Diathermy of Kidney. H. Bronner and J. Schüller.—p. 1829.
*Schlatter's Symptom-Complex in Adults. M. Brandes.—p. 1830.
Results of Amebic and Bacillary Dysentery. P. Mühlens.—p. 1832.
Bronchitis and Peribronchitis Amoebiana. W. Haberfeld.—p. 1834.
One-Piece Adhesive Plaster Bandage for Fracture of Clavicle. H. Hans.—p. 1837.
Odor of Breath in Cardiac Decompensation. W. Ruhmann.—p. 1838.
Endocrine Diseases in Practice. W. H. Veil.—p. 1839.

Birth Crisis in Blood Picture of the New-Born.—The changes in the infantile blood picture which occur during or immediately after birth correspond to the changes in the composition of the blood of adult human beings or experimental animals on resorption of extravasated or parenterally introduced blood. Büngeler and Schwartz found that a direct relation existed between the length and difficulty of the birth and the degree of the blood changes. They conclude that the blood crisis in the new-born is caused by resorption of masses of blood and protein, which originate in birth traumas. In a series of infants, full-term and premature, the blood of the umbilical cord, obtained at the moment of birth, corresponded morphologically to that of adults. A storage of iron pigment by the reticulo-endothelial system was noted in both full-term and premature infants. This storage began after birth and reached its height at the end of about two months. In degree it corresponded to the amount of blood destruction at birth. The authors recognize in this the late result of hemorrhages of birth traumatism.

Intradural Injections of Pituitary Solution in Pregnancy.—A single suboccipital injection of 1 cc. of solution of pituitary did not interrupt gravidity in Ehrhardt and Wiesbader's experiments on rabbits. A second injection caused severe intoxication and death. In young rabbits a single injection sufficed to cause the last named results: Solution of pituitary, injected intradurally, could be recovered an hour later by suboccipital puncture. Attempts to interrupt pregnancy in women by a single intralumbar injection of 1 cc. of solution of pituitary also failed. Symptoms of intoxication did not appear. In view of the results in animals, repeated injections were not given.

Diathermy of the Kidney.—Diathermy of the kidney did not increase diuresis appreciably in Bronner and Schüller's researches on the healthy human kidney.

Schlatter's Symptom Complex in an Adult.—Brandes reports a typical case of Schlatter's disease of the tuberosity of the tibia in a man, aged 45, who had not, to his knowledge, had the disease in youth.

Zentralblatt für Chirurgie, Leipzig

54: 3265-3328 (Dec. 17) 1927

Use of Irradiated Ergosterol in Healing of Fractures. E. Bors.—p. 3266.
Roentgen-Ray Burns. R. Mühsam.—p. 3269.
Electrocardiographic Studies During Anesthesia. E. Unger and H. May.—p. 3272.
*Treatment of Varicose Veins. E. Unger.—p. 3273.
Myelography with Iodipin. H. Stölzner.—p. 3274.
Strangulation Ileus Caused by Caseating Mesenteric Lymph Gland. R. Gutzeit.—p. 3277.
Peritonitis in Tabes. C. Lagemann.—p. 3278.

Treatment of Varicose Veins.—Unger exposes the saphenous vein, sections it across, introduces a ureteral catheter into the lumen and passes it downward as far as it will reach, which is usually below the knee. He then injects through the catheter either 20 per cent sodium chloride solution or glucose solution. As the catheter is slowly withdrawn, from 1 to 2 cc. of fluid is injected for every 5 to 10 cm. of vein length. It is possible in this way to obliterate the entire venous tree. The method was used in cases with marked dilatation of veins and in cases with chronic eczema and ulcerations.

Klinicheskaya Meditsina, Moscow

5: 1039-1110 (Oct.) 1927

Mechanism of Immunity in Tuberculosis. B. A. Lubarskiy.—p. 1039.
*Electrocardiography. I. Shattenshtein.—p. 1049.
Sedimentation of Erythrocytes and Matefi's Reaction in Gastro-Intestinal Diseases. G. L. Hechtman and M. E. Slanskaya.—p. 1062.
Resistance of Erythrocytes and Blood Proteolytic Antiferment. M. A. Barbalin and M. A. Grunskaya.—p. 1069.
Sedimentation of Erythrocytes in Typhus. B. F. Bassoff and B. A. Ginzberg.—p. 1077.
Matefi's and Darani's Reactions and Sedimentation of Erythrocytes in Pulmonary Tuberculosis. U. Abakelia.—p. 1081.
Ureterovesical Junction. D. H. Atabekova.—p. 1085.

Electrocardiography.—In Shattenshtein's opinion, the greatest service so far rendered by the electrocardiograph has been to enable the clinician to differentiate and localize various types of arrhythmia. As a method of study, it aids in the diagnosis of organic disease of the heart muscle. It is the only means of recognition of lesions affecting the deeper portions of the conduction apparatus. It furnishes important information as regards the prognosis of cardiac disease and is valuable in the control of the therapeutic effect of cardiac remedies.

Vestnik Rentgenologii i Radiologii, Leningrad

5: 241-335, 1927

Effects of Roentgen Ray and of Radium on Synthesis and Analysis in a Hen's Egg During Normal Incubation. A. W. Reprev.—p. 245.
Relation of Apparatus to Distribution of Roentgen Ray. D. N. Nassledow and T. M. Catchoura.—p. 255.
Roentgen-Ray Diagnosis of Ureteral Kinks. S. N. Lissowskaya and S. G. Simonsson.—p. 271.
Cardiac Shadows in Valvular Disease. L. J. Chik and B. M. Stern.—p. 279.
Roentgen-Ray Study of Lesions of Small Intestine. O. O. Den.—p. 289.
Roentgen-Ray Diagnosis in Gynecology. S. C. Odicharia and W. A. Zakrzewskiy.—p. 295.
Effect of Roentgen Ray on Pulmonary Tuberculosis. R. J. Gassoul and S. M. Sandberg.—p. 301.
*Diaphragmatic Hernia on Right Side. A. M. Rybak.—p. 315.
*Fabella. S. A. Pokrowskiy.—p. 323.

Diaphragmatic Hernia on the Right Side.—Diaphragmatic hernia occurs more commonly on the left than on the right side. The clinical symptoms are vague and in no sense characteristic. In the absence of trauma, its existence is usually revealed incidentally in the course of roentgen-ray examination or at necropsy. The greatest difficulty is experienced in differentiating hernia from relaxation of the diaphragm, so-called eventration. The following are considered as characteristic roentgenologic signs: (1) Paradoxic movement of the diaphragm, a respiratory ascent instead of descent. (2) Angular or irregular contour of the diaphragm. (3) Loss of continuity of the diaphragm. (4) Presence of abdominal contents above the contour of the diaphragm. (5) Air in thoracic cavity after induction of pneumoperitoneum. Hernias of the right side are rare. They are as a rule congenital and develop through the foramen of Morgagni. They are found in old people.

Fabella.—The importance of fabella, the sesamoid bone occasionally found in the lateral ligament of the gastrocnemius

muscle, is due to the fact that its shadow may be confused with that of a loose body in the knee joint. According to Köhler, it is found in from 10 to 15 per cent of all lateral roentgenograms of the knee. It is oval or round and its dimensions vary between 3.5 mm. and 13.5 mm. in length, 2 mm. and 9 mm. in width and 1.5 mm. and 10 mm. in thickness. It must be differentiated from a loose body in the joint, a torn meniscus, a calcium deposit in soft tissues of the joint, from calcifications of the bursa gastrocnemii and from large phleboliths. In doubtful cases a roentgenogram made after distention of the knee with oxygen is helpful.

Acta Soc. Med. Fennicae "Duodecim," Helsingfors

8: 1-207, 1927

*Histopathology and Healing of Chronic Gastric Ulcer. T. Kalima.
Rupture and Stricture of Urethra. A. Pelkonen.
Surgical Syphilis of Kidney. S. A. Brofeldt.

Histopathology and Healing of Chronic Gastric Ulcer.—As a result of his histologic studies of freshly resected stomachs, Kalima formulates certain pronouncements. The bactericidal action of hydrochloric acid may be construed as a favorable factor in healing. Ulcers from patients with hyperchlorhydria showed granulation tissue as often as those from patients in whom hydrochloric acid was absent. The presence of granulation tissue is the criterion of the tendency to heal. Merke showed that ulcers in acid stomachs give an alkaline reaction. Apparently ulcers can heal in an acid stomach. Circulatory disturbances due to changes in the blood vessels, to spasm, or to spastic contractions of the stomach wall may act unfavorably on healing. It is a common observation that the muscle layer is completely destroyed. That and the functional mechanical causes pointed out by Aschoff and having to do with peculiar properties of the "magenstrasse" are, in the author's opinion, the most potent factors that make for chronicity. Every ulcer shows a reparative as well as destructive tendency. Ulcer heals by formation of granulation tissue from the submucous layer. This plug or mushroom of granulation tissue is then bridged over by proliferation of the epithelial layer of the mucosa. It is quite likely that the subsequent scar contraction of the granulation tissue acts as a factor in bringing the edges of the ulcer in closer contact. Ulcers which have become chronic, ulcers which penetrate into neighboring organs, and particularly large ulcers show no tendency to heal. What surgical indications can one derive from these observations? The finding of scars at autopsy and in resected stomachs demonstrates beyond any doubt the tendency to healing. It appears rational, therefore, to subject patients to medical treatment first. Exacerbation of symptoms corresponds to the existence of an acute gastritis. It would, therefore, appear to be safer to operate in the latent stage. The distribution and extent of gastritis found in histologic studies suggests the reasonableness of a wider excision, particularly of the lesser curvature.

Hospitalstidende, Copenhagen

70: 965-988 (Oct. 13) 1927

*Light Sensitization in Ultraviolet. H. C. A. Lassen.—p. 968.
*Cultivation of Pigmented Epithelium. O. Kapel.—p. 982.

Light Sensitization in Ultraviolet.—Lassen found that hematoporphyrin (1:10,000) sensitized paramecia to the innermost and outermost field of the ultraviolet rays, i. e., 366-313 millimicrons and 253-240-227-220 millimicrons. At two points in the ultraviolet spectrum of the mercury quartz lamp, the relative biologic effect on the paramecia was of maximum intensity; one at 280 millimicrons, the other in the zone between 227 and 220 millimicrons. The fields in which the hematoporphyrin showed a sensitizing effect corresponded to those in which its chief ultraviolet absorption occurs.

Pure Cultures of Pigmented Epithelium.—Kapel cultivated the black pigmented layer of the retina of chicken fetuses, from 10 to 13 days old, in chicken plasma and embryonal extract. In the first forty-eight hours wandering cells containing in their protoplasms large, dense masses of black pigment developed from the explant. The scant growth of inky black, closely adherent pigment cells observed on the first passage increased in the next passage, the wandering cells disappeared, and a culture was left consisting exclusively of epithelial cells with typical growth in the membrane, i. e., a pure culture. This epithelium was cultivated for two months (twenty passages), and the pigment content was as high at the twentieth passage as at the third or fourth. The individual cells were easily distinguished, not only because of the pigment, but because of the distinct and wide intercellular spaces. The individual cells, regular in form, usually contained one nucleus and one or two nucleoli; large interspersed cells contained from two to four nuclei and abundant pigment; stellate cells particularly rich in pigment were also seen. The pigment in the membranes appeared as thin, regular, dark brown rods.

70: 989-1016 (Oct. 20) 1927

*Salomon's Test in Gastric Cancer. F. Vogelius.—p. 994.
Induced Premature Delivery with Contracted Pelvis. E. Brandstrup.—p. 1004.

Salomon's Test in Gastric Cancer.—Vogelius employed this test in seventy-five cases and believes it useful, especially in combination with other tests. He recommends letting the water pass down and up three or four times, when a stomach washing is obtained which will give a definite reaction. In general, the sources of error can be avoided or minimized. In scirrhous cancer the result may be negative. Quantitative determination of the nitrogen in the washing, according to Keldahl, he considers unnecessary. Heller's test, precipitation with picric acid, and Esbach's apparatus seem to him sufficient and more reliable. In cases of doubtful reaction on the first test, he advises repeated tests.

Norsk Magazin for Lægevidenskapen, Oslo

88: 889-1194 (Nov.-Dec.) 1927

*Tuberculosis in Youth and Relation to Infection in Childhood. F. Harbitz.—p. 892.
*Pleuritis. O. Scheel.—p. 913.
*Surgical Treatment of Chronic Gastritis. J. Nicolaysen.—p. 919.
Pathogenesis and Etiology in Ancient Greek and Roman Medicine. A. Holst.—p. 935.
Profuse Lentiginosis (Unilateral). K. Grøn.—p. 949.
Insulin Treatment of Diabetes Mellitus in Children. K. U. Toverud.—p. 956.
*Experimental Rickets. P. M. Holst.—p. 1011.
*Importance of Anaphylaxis in Internal Medicine. A. de Besche.—p. 1025.
*Choice of Abdominal Incision. S. Widerøe.—p. 1046.
*Typhoid Carriers; Their Treatment. Margit Haaland and Magnus Haaland.—p. 1057.
*Case of Paratyphoid Cholecystitis and Cholangeitis with Cirrhosis of Liver and Primary Cancer of Liver. R. H. Dahl.—p. 1086.
*Blood Vessel Changes in Tarred Mice. L. Kreyberg.—p. 1101.
*Leprous Changes in Blood Vessels. H. P. Lie.—p. 1108.
*Increase in Weight in Breast-Fed Infants. K. Brandt.—p. 1120.
*Sodium Chloride as Neutrality Regulator. H. A. Salvesen.—p. 1124.
*Case of Chimney Sweep's Cancer. G. Guldberg.—p. 1131.
Iridencleisis with Iridotomy in Acute Glaucoma. S. Holth.—p. 1156.
*Ileus of Large Intestine in Fetal Anomalies. J. Holst.—p. 1164.

Tuberculosis in Youth and Relation to Infection in Childhood.—Harbitz reviews tuberculosis in late childhood and early adult life with special reference to Norwegian works in this field. His statistics indicate that between the ages of 16 and 30 tuberculosis in most internal organs, except the lungs, is generally of exogenic origin. In his opinion the majority of cases of pulmonary tuberculosis in this period are secondary, but reinfection in adult life must also be considered in prophylaxis.

Pleuritis.—In Scheel's patient, a woman, aged 42, weakness with pain in the left shoulder, under the left clavicle, and along the costal arch on the left side for three months was followed by sudden onset of pleuritis. He believes the pleuritis in this instance resulted from a tuberculous process in the bronchial glands, to which the general symptoms preceding the pleuritis were due, the irritation of the phrenic nerve by the enlarged bronchial glands causing the typical phrenic pain. Of 956 cases of pleuritis, more than two thirds occurred between the ages of 11 and 30, one half of all between the ages of 16 and 25. Of the 812 patients observed for from one to ten years, 22.4 per cent developed tuberculosis, chiefly pulmonary, with a total mortality of 9.9 per cent, the highest mortality occurring in the first three years.

Surgical Treatment of Chronic Gastritis.—Nicolaysen reviews chronic gastritis in cases with typical duodenal

symptoms without demonstrated ulcer and in cancer-like cases with beginning, definitely localized cancroid degeneration, in which operation fails to reveal a tumor. He reports on the seven cases of chronic gastritis and duodenitis with ulcer symptoms treated surgically, since 1922, in a material of 104 cases in which resection for ulcer was done. With a choice between pyloromyomectomy and resection of the stomach, the latter is advised in cases with hypochlorhydria. Gastro-enterostomy has proved useless.

Experimental Rickets.—Holst produced rickets in rats by feeding cereals and yellow peas exclusively. Rats fed on polished rice developed typical rickets, but feeding with rice starch failed to cause rickets. When extract of oatmeal was added to the rice starch, rickets resulted. He concludes that the rickets produced by an exclusively cereal diet is due to a peculiar rickets-producing substance which experiments show can pass through parchment paper and be precipitated with alcohol. While the rickets resulting from the cereal diet can be prevented by the administration of cod liver oil and calcium, he sees more reason for assuming a partial overnourishment than a partial undernourishment as its cause.

Importance of Anaphylaxis in Internal Medicine.—De Besche points out the increased understanding and recognition of various pathologic phenomena in man through experimental study of anaphylaxis. He calls special attention to the importance of exogenic causes of allergic symptoms, but does not disregard the possible autogenic origin of allergic and related conditions. Further research is urged.

Choice of Abdominal Incisions.—Widerøe discusses abdominal incisions and describes those consistently used in his large laparotomy material. In gastric and duodenal operations a pararectal vertical incision, as short as possible, is made on the right side; hernias are infrequent after this incision and notably less frequent than after an epigastric median incision. In operations on the biliary tract, a high pararectal incision, partly above the costal level, is employed, affording good access with a short incision; hernias are rare, even with drainage, and those which do occur are small and unimportant. Pfannenstiel's transverse incision is preferred in gynecologic interventions, but the median incision between the navel and symphysis is often necessary. Extirpation of the spleen is done with a pararectal incision on the left side. Epigastric median incisions are never used.

Typhoid Carriers and Their Treatment.—Haaland and Haaland present in chronologic order the forty-two cases of chronic carriers of typhoid and paratyphoid found in western Norway from 1918 to 1927 (thirty-eight in women). Of these, fourteen were treated surgically, twelve with success. Food and milk appear to be the chief mediums of infection.

Case of Paratyphoid Cholecystitis and Cholangeitis with Cirrhosis of Liver and Primary Cancer of Liver.—Dahl publishes the case of a bacillary carrier with paratyphoid cholecystitis and cholangeitis, and primary cancer of the liver of nodular type on a cirrhotic or cholangeitic basis.

Local Changes in Blood Vessels of Tarred White Mice.—Kreyberg demonstrated that painting white mice with tar produces, from the first application, a marked local hyperemia, constant as long as the application continues, with gradual hypertrophy of the tissues, first of the epithelium. The epithelial hypertrophy is followed by the formation of warts and papillomas, which often show a close relation to distended capillaries. Simultaneously multiple capillary thromboses occur, primarily near and in the wart centers. The capillary disturbances decrease the food supply, particularly the oxygen supply, and in course of time manifestly malignant tumors appear.

Leprous Changes in Blood Vessels.—Lie states that the leprous changes in the peripheral blood vessels of the extremities in nodular leprosy, mainly of sclerosing kind, affect both arteries and veins, the latter particularly, sometimes blocking the vein. The tunica adventitia and interna are most affected. Lepra bacilli are always present in the walls of the vessels, sometimes in great number. The changes may follow leprous infiltration of the skin or direct infection from the blood. He emphasizes the absence of noteworthy changes in the greater blood vessels and in the blood vessels of the heart, brain, spinal cord, liver and spleen, a fundamental difference between leprosy and syphilis. The changes in the blood vessels may cause swelling and cyanosis of the affected skin territory. The changes in the blood vessels in lepra mutilans are considered as probably secondary and due in some way to destruction of the peripheral nerves.

Increase in Weight in Breast-Fed Infants.—Brandt reports that in 1925 and 1926 in the women's clinic in Oslo, where breast feeding is given according to Budin, most full-term infants had recovered their initial loss of weight by about the twelfth day. Large infants and small infants (premature) increased in weight more slowly than those of average size, but in the premature the initial loss was little or none, as feeding began immediately after birth.

Sodium Chloride as Neutrality Regulator in Organism.—Salvesen says that in the last stages of nephritic acidosis pronounced increase in the acidosis often appears, due to the formation of organic acids. His data show that during this condition, as in diabetic coma and less grave diabetic acidosis, the chlorides of the blood serum give up part of their sodium to neutralize the foreign acids.

Chimney Sweep's Cancer and Cancer in Early Life.—The first known case of chimney sweep's cancer in Scandinavia is contributed by Guldberg: a chimney sweep, aged 60, had a prominent infiltrative tumor of hazel nut size on the under side of the scrotum with crater-shaped ulceration on its surface, the rest of the scrotal skin being the seat of multiple papillomas and chronic dermatitic changes. No glandular metastases were detected. In 4,612 cases of cancer, 157 occurred in patients less than 30 years of age, eleven of these were between the ages of 8 months and 15 years. Of the 157 cases, fifty-three were in the female genitalia, twenty-four in the digestive tract, and nineteen in the skin. Cases of cancer in the digestive tract, in the skin, and in the kidneys are reported.

Ileus of Large Intestine in Fetal Intestinal Anomalies.—Six cases of ileus of the large intestine are described by Holst. They occurred with volvulus of the cecum in simple cecum mobile, total ileocecal invagination with common ileocolic mesentery, total volvulus of the colon with common ileocolic mesentery and megacolon of extreme size, volvulus of the cecum with retroposition of the colon, and two cases of volvulus of the sigmoid flexure with macrocolon. Eleven cases of retroposed colon from the literature are also reviewed. He assumes that the retroposition of the colon had developed on the basis of a primitive situs. In all his cases the large intestine was of abnormal length and thickness.

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*Lumbago in Relation to Accident and Sickness Insurance. J. Ulrich. p. 1041.
Treatment of Cryptogenic Septicemia with Staphylococcus Vaccine and Polyvalent Streptococcus Serum. V. Bie.—p. 1046.
Genius Epidemicus in Copenhagen: III. A. Magelssen.—p. 1049.
*Bismuth Abscess with Fatal Outcome. J. Foged.—p. 1051.
Fried Forcemeat and Paratyphoid. S. A. Larsen.—p. 1052.

Lumbago in Relation to Accident and Sickness Insurance.—Ulrich says that traumatic lumbago is rare, rheumatic lumbago far more common; sometimes there is a combination of both. He pleads for a complete history and thorough examination. In cases of doubt, the decision must be for the insured. In rheumatic lumbago the patient should be directed to use the muscles as much as possible; in traumatic lumbago an attempt should be made to resume work six or eight days after the accident. If recovery does not follow within four weeks, the case should be referred to a specialist and roentgen-ray examination made.

Bismuth Abscess with Fatal Outcome.—During combined bismuth and arsphenamine treatment, Foged's patient, aged 50, with a history of syphilis, developed a bismuth abscess and an arsphenamine dermatitis. Foged attributes the fatal result to the bismuth phlegmon, which led to acute pelviperitonitis. He believes this to be the only recorded instance of death from bismuth abscess.